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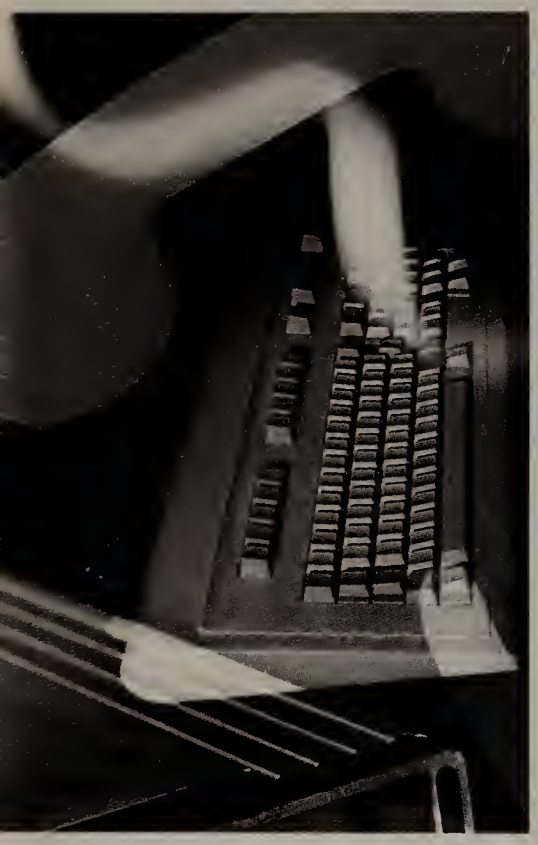

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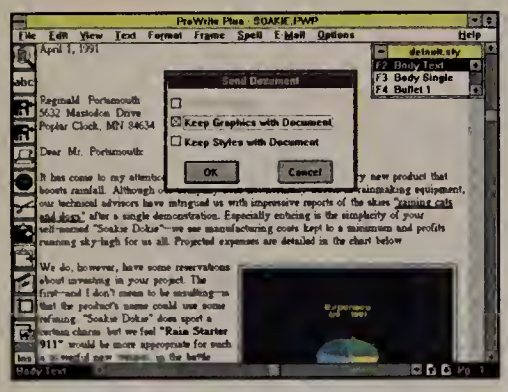

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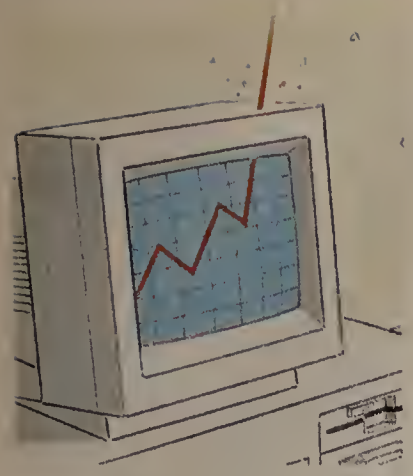

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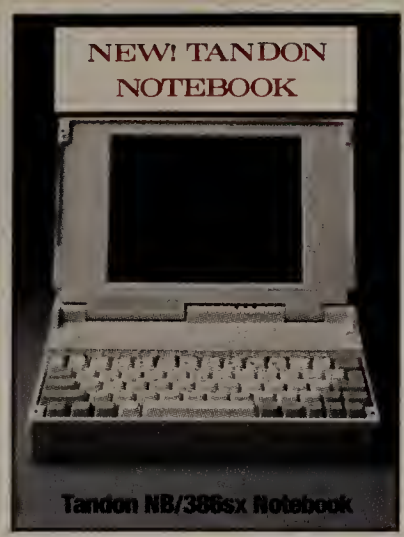

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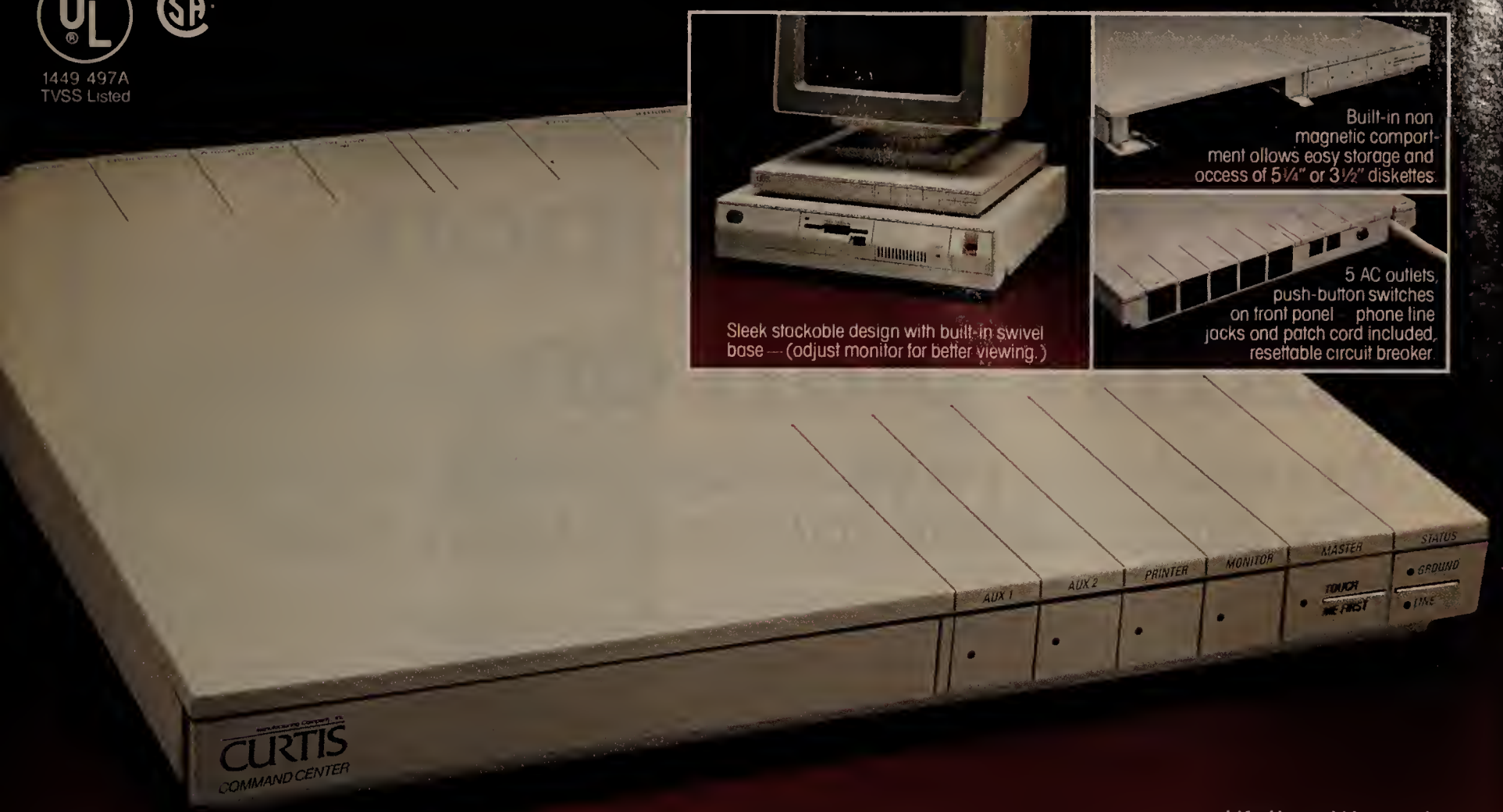

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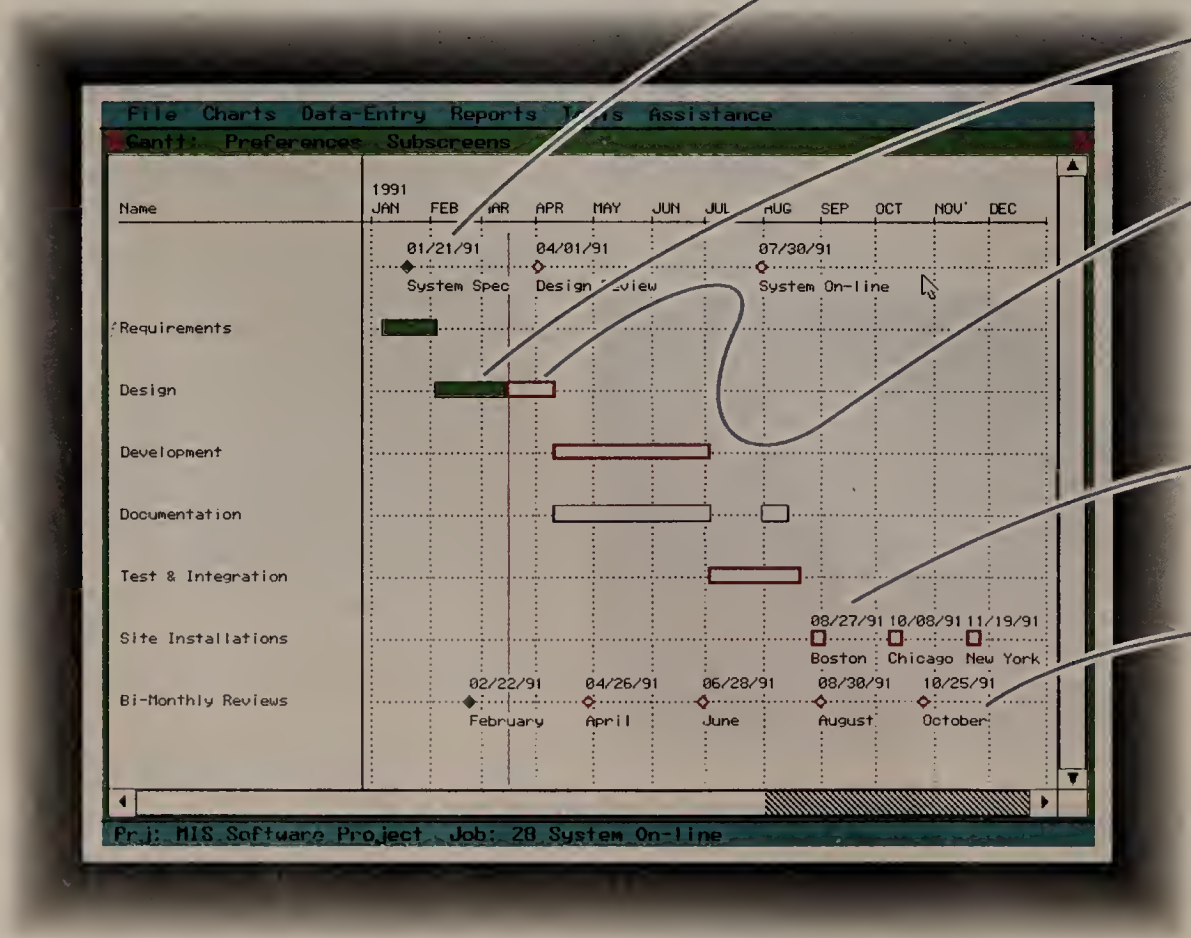
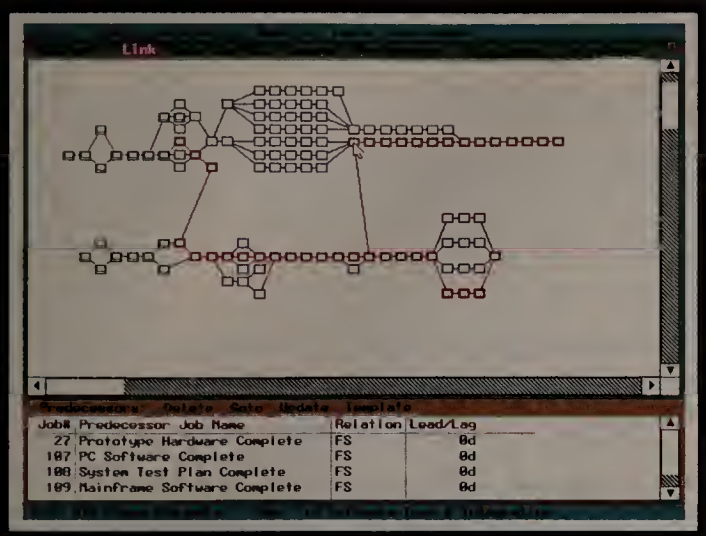


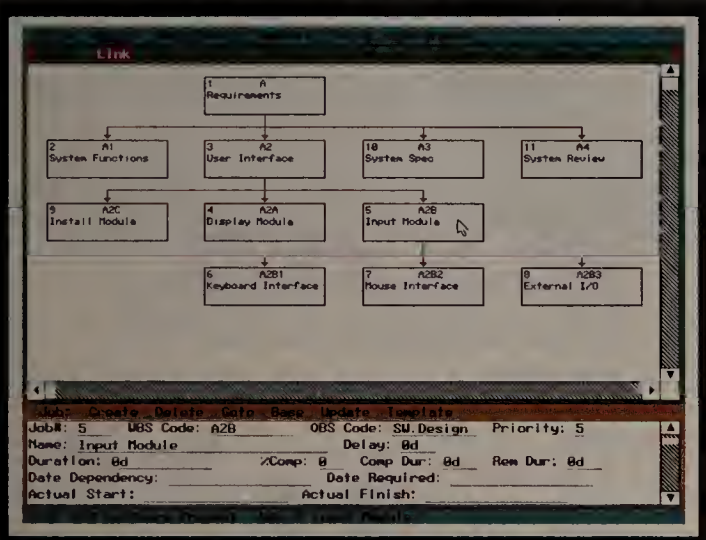
Shaded areas illustrate "percent complete" for each job.

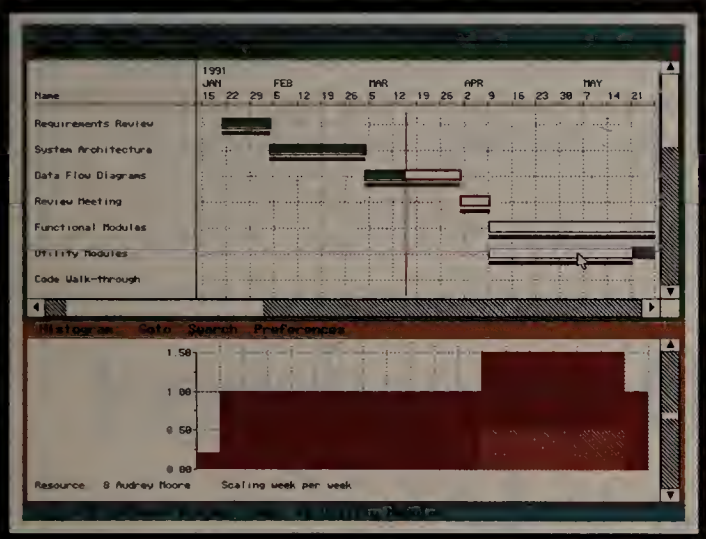
The critical path is always clearly visible, indicated by a heavy red outline.

You can annotate your chart with information such as when and where an event takes place, even at summary levels.

Information can be categorized and labeled — all on the same line — maximizing vertical screen space and helping you create tighter, crisper presentations.







● **Flexible zoom options (top).** Project Scheduler 5's network diagram gives you an easy-to-read overview of dependencies at five selectable zoom levels. It also lets you define links across projects within and across work groups.

● **Organizational tree structures (middle).** Tree structures let you easily organize your project by both Work Breakdown Structure (WBS) and Organization Breakdown Structure (OBS) codes. This dual organization capability lets you tailor the structure and reporting of your project to fit your unique needs. You can create codes from your tree, or create the tree from your codes — whichever is more convenient.

● **Interactive and automatic resource leveling (bottom).** By leveling resources interactively using a resource-filtered Gantt with the resource histogram in the lower window, you can quickly pinpoint overloads and make adjustments. With automatic resource leveling, the schedule is adjusted to fit within specified availability limits for each resource.

Feature	Project Scheduler 5	Microsoft* Project for Windows*	Time Line* 4.0
Project planning and tracking	●	●	●
Gantt and network charts	●	●	●
Work group project connectivity	●		
Tree structures	●		●
Staffing profiles	●		
Cost curves	●		
Cost inflation modeling	●		
True PERT analysis	●		
Batch reporting facility	●		
Graphical user interface	●	●	

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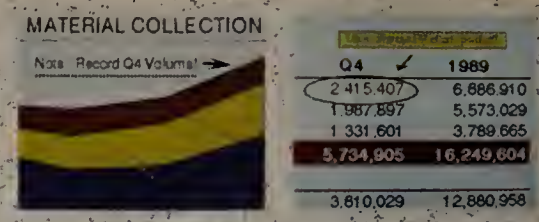

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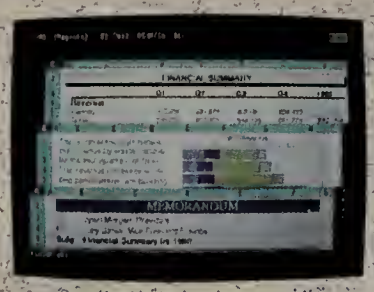

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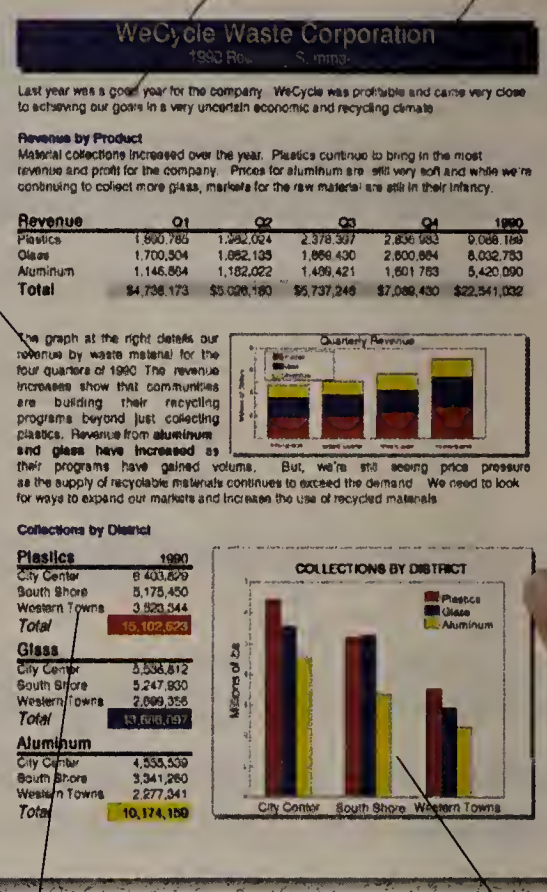
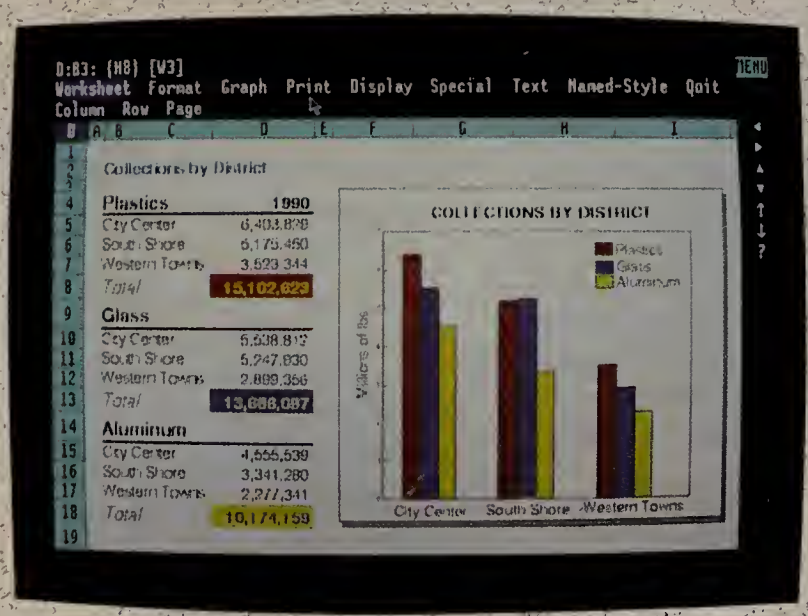
Only Release 3.1 lets you automatically wrap text around a graph.





A graphical WYSIWYG (what-you-see-is-what-you-get) environment shows you exactly what your output will look like. It's easier to work with, and there's no guesswork.

Mix bold, italics, underlines, colors and typefaces to create over 100 text-style combinations—more than any other spreadsheet.

You can choose from over 200 graph style combinations—even display more than one graph per page.

Since 1983, 7 out of 10 spreadsheet buyers have chosen 1-2-3.* Now we're going after the other 3.

Over 10 *million* business people are more productive and more insightful because of Lotus 1-2-3.

Now Lotus introduces 1-2-3 Release 3.1.

And if you're currently using 1-2-3, you'll find it offers the features you've been wishing for. Like the ability to see, on screen, exactly what your printed output will look like. Our unique 3D approach to organizing and consolidating spreadsheet data. And the most professional and persuasive printed reports you've ever created on your computer.

Or if you're one of the holdouts not using 1-2-3, you'll find it offers an interactive, graphical environment. Plus it works with Windows 3.0. And supports both a keyboard and a mouse.

We've prepared a free demo disk to show you what 1-2-3 can do for you. **First time buyers should visit their local Lotus Reseller. Or to request a Release 3.1 Auto Demo, call 1-800-TRADEUP, ext. 1074**

And see why 7 out of 10 spreadsheet buyers chose 1-2-3. And the other 3 may not be far behind.

Introducing Lotus 1-2-3 **3.1**

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*As reported by Audits & Surveys, Inc., measuring IBM-Compatible spreadsheet sales among computer and software dealers nationwide.

Contributing Editor Scott Spanbauer contemplates the meaning of long-lasting PCs.

ROBERT CARDIN

Standing the Test of Time

How do you tell a good PC from a bad one? Scott Spanbauer, the author of this month's cover story, has been working under the hood long enough to know. In the mid-eighties, he was part of *PC World*'s tech support MASH unit, transplanting disk drives, replacing power supplies, curing memory problems, swapping video boards. He learned that today's shiny new PC is tomorrow's doorstop, unless it's been designed with the rising demands of future applications in mind.

Scott's review spotlights nine 386 systems powerful enough to stay useful at least five years—the optimal PC life span. These machines run at 33 MHz, the 386's top speed, delivering enough zip to make a full suite of *Windows* applications sit up and beg. No matter how *Windows* changes and its applications evolve, 33-MHz 386s should be able to handle it.

A 33-MHz 386 sounds a little extravagant for the desktop, you say? Then you might consider one as a file server. Scott took out his calculator and discovered that the average 25-MHz 486—that dynamo most people think of as an ideal server—costs about one-quarter more than the average 33-MHz 386. But in the disk-heavy operations that file servers dine on, there's virtually no difference in the performance.

Scott says "it pays to dig" when shopping for one of these babies, and he offers an excellent place to start. "Once you identify a few good candidates," says Scott, "the first thing to do is compare the service and support agreements." Both of our Best Buys, the AST Premium 386/33TE and the Arche Legacy 386-33, come with on-site service as an option. Scott believes that on-site service is a real plus. "If I had anything that generated revenue for my company on my machine, I'd buy on-site service."

Service, as we like to say at *PC World*, is our middle name. This month we're introducing four unbeatable tools to help you manage PC product planning and purchasing.

First and foremost, there's the *PC World Street Price List*. From this month forward we'll give you the average dealer prices for the top 30 PCs based on a nationwide sampling of hundreds of dealers, plus the average street prices for those same PCs in eight major metropolitan areas. Talk about a bargaining tool!

You'll find the three new additions to *Consumer Watch* just as valuable. *Manager's File* will take on the hot issues of the day for modern managers and provide ready solutions in checklist, clip-'n'-save form. In this month's *File*, we lay out the basics of the well-designed ergonomic workstation, with the health and safety of your PC work group in mind.

We're also introducing *Bug Watch*, an item that, beginning next month, will alert you to software bugs (and fixes) found by users and vendors alike. In addition, *Service Excellence* will clue you in to vendors who've provided outstanding service to customers. But don't worry—we won't change *Shop Talk*, the heart of *Consumer Watch*. Send your letters of complaint or praise, and Associate Editor Roberta Furger will continue to keep vendors, dealers, and distributors honest.

Eric Knorr
Editor

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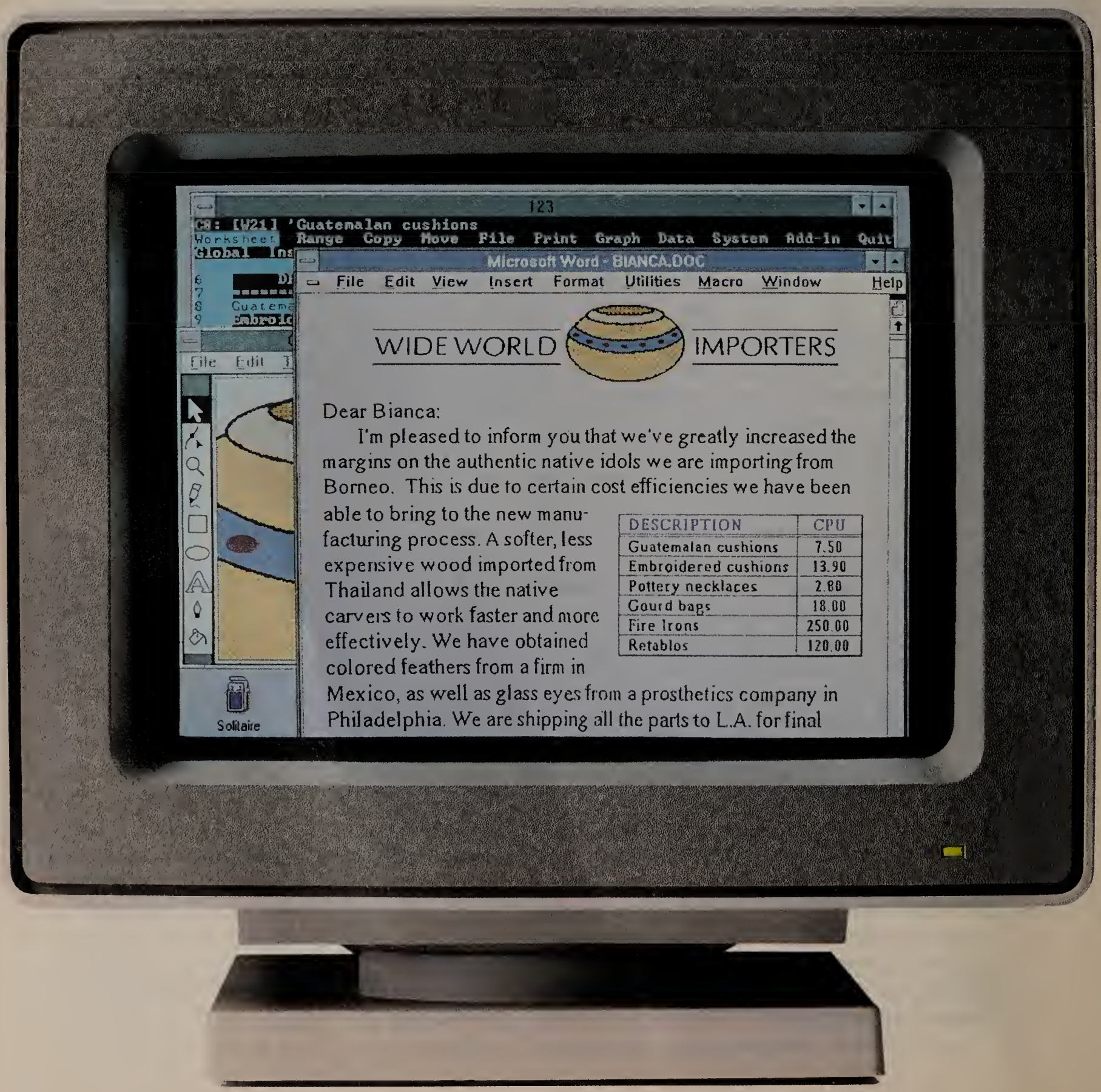

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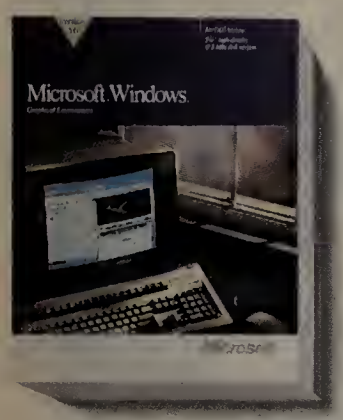

The Microsoft® Windows™ graphical environment version 3.0 makes it easy for you to do a lot more with your PC. That's because the Windows environment has friendly icons, menus and dialog boxes that make its powerful features very accessible.

Windows lets you work with a variety of applications on-screen at the same time. Including your character-based programs.

But it's when you start using Windows applications that you get the most out of your PC. Windows applications are easy. In addition they all work essentially the same way. So once you learn how to use one, you generally know how to use them all.

And they're so intuitive that experimenting with them is fun.

Windows applications let you cut and paste text and graphics. And let you combine them right on your screen. They also let you print out exactly what you see.

You can even establish links between Windows applications. Which means, if you change any numbers in Microsoft Excel for Windows, the chart you cut and pasted into your Microsoft Word for Windows document will be automatically updated.

So call us at (800) 541-1261, Department P32, to find out more about Windows, Windows applications or the big Windows World Convention and Exposition coming up May 20th and 23rd in Atlanta.

Because with Windows, you can start taking the work you do every day a little easier.

And have more to show for it.

Microsoft®

Making it all make sense™

For more information, call (800) 541-1261, Dept. P32. In Canada, call (416) 568-3503. Outside the U.S. and Canada, call (206) 936-8661. © 1991 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Making it all make sense *and Windows are trademarks of Microsoft Corporation.*

LANtastic's™ tiny RAM now has more cards to play with.

If the presence of Micro Channel machines has ever stood between you and the joy of running the award-winning LANtastic PC Network, this is your lucky day. Artisoft has just added three new Micro Channel adapters to its compliment of AE-2 Ethernet, 2Mbps and Voice adapters.

PC MAGAZINE EDITORS' CHOICE March 28, 1989 LANtastic

LANtastic AE-2 MC Ethernet for Micro Channel, a 16-bit adapter that can be used in either a 16-bit or a 32-bit slot, is in 100% compliance with IEEE 802.3 and Ethernet standards, and comes with on-board 16K RAM that is user expandable to 64K. Since AE-2 MC Ethernet is software compatible with Novell's NE/2000 hardware, you can run Novell "out of the box."

PC MAGAZINE EDITORS' CHOICE May 29 1990

LANtastic 2Mbps MC adapters are the perfect way to economically network small or midsize businesses with Micro Channel computers. Each card includes a 10Mhz coprocessor and 32K of on-board dual-ported RAM, along with software-selectable IRQ and RAMBASE address settings. Artisoft's version of the NetBIOS standard can be loaded into and executed within the adapter. This plunges the NetBIOS draw on a PC's base RAM down to just 2K and off loads the network processing onto the adapter. The cards are easy to install and use inexpensive dual-twisted pair cable.

LANtastic Voice MC adapters let you save sound and speech onto disk for playback later on Micro Channel machines. Use them with LANtastic NOS 3.0 or above, and you can send voice messages across your LANtastic network. Just pick up the telephone handset provided with each Voice Adapter, bring up a handy on-screen menu, and talk. Use Voice Chat to carry on a real time conversation, or save the message for playback later in your own voice – either through the handset or through the Micro Channel machine's internal speaker.

PC WORLD BEST BUY

LAN TIMES RECOMMENDED NETWORKING

Now it's easier than ever to run LANtastic's award-winning Network Operating System on Micro Channel machines. Call 602-293-6363 or fax 602-293-8065.

ARTISOFT
Revolutionizing Connectivity

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Circle 18 on reader service card

IBM ENDORSES NETWARE

Expands Corporate Net Options, Moves Away From Dependence on Microsoft LAN Manager

Breaking free of its exclusive local area network alliance with Microsoft, IBM is bringing Novell's NetWare into its enterprise-wide network strategy. IBM now becomes a single source for both its own OS/2-based *LAN Server* and the leading network system software.

Big Blue will market, service, and support NetWare and work with Novell to integrate it into the IBM corporate networking scheme. Next year Novell will offer versions of NetWare that run atop OS/2 and AIX (IBM's UNIX).

For four years IBM has heavily promoted its *LAN Server* derivative of Microsoft's *LAN Manager*, and it has recently worked to converge the two. But given NetWare's overwhelming market share and IBM's recent falling-out with Microsoft over OS/2, Big Blue has changed strategy. "The vast majority of our customers will have both in their shops," says personal systems head Jim Cannavino. "We will not bias sales in either direction."

The two products offer different strengths, explains Lee Reiswig, assistant general manager for programming. *LAN Server* fits smoothly within OS/2 development environments and is a linchpin of IBM corporate networks. NetWare is faster, connects non-IBM platforms, and offers high-end features such as fault tolerance.

Freed from its reliance on Microsoft, IBM gains more control over its network strategy, points out Craig Burton, CEO of the *Clarke-Burton Report*. Meanwhile, Microsoft loses important backing: *LAN Server* accounts for about a quarter of *LAN Manager*–based installations. *LAN Manager* has fared poorly in reviews (*PC World*'s review in March 1991 judged it "close to unusable"). Still, "Microsoft will have a lot to say about where networking goes," notes David Marshak of Patricia Seybold's Office Computing Group. Among Microsoft pursuits is a plan to move many LAN services into future operating systems.

LOTUS DELIVERS cc:MAIL

Jumps to the Lead in E-Mail, Writes New Notes

In a bid to become the premier vendor of network-based applications, Lotus Development Corporation is acquiring the lead electronic-mail supplier, updating its *Lotus Notes* group communications program, and broadening *Notes*' distribution.

Lotus will buy cc:Mail, Incorporated, for an undisclosed price. With an installed base of 850,000 users, *cc:Mail* has an estimated 35 percent of the fast-growing PC E-mail market. The software runs under DOS, *Windows*, OS/2, and the Macintosh and across all major PC networks and most mail gateways.

"Mail is the next big application," declares cc:Mail president Philippe Courtot, who predicts that this year E-mail will explode the way fax did. "It's very important to strike the right alliances so we can stay at the forefront of the marketplace."

The deal coincides with the release of *Lotus Notes 2.0*. The upgrade offers full support for laptops, *Windows 3.0*, and Banyan networks, tight links with other *Windows* and OS/2 applications, boosted security, and many other enhancements. More than 35,000 users in 75 organizations already run *Notes*, and Lotus hopes to expand that base by slowly opening distribution to value-added resellers and adding Mac and UNIX versions.

"The market is starting to heat up, and the fit of *cc:Mail* and *Notes* is very good," observes Michael Millikin, vice president of Patricia Seybold's Office Computing Group.

Lotus will ensure that *cc:Mail* and *Notes* work together more closely on a network, uniting the two packages in a consistent environment that developers can exploit for network messaging—a large and growing field. Lotus archrival Microsoft reportedly plans a similar strategy based on the acquisition of Consumers Software.

COMPAQ IS ON THE LINE

Nod to Users Implements Direct Telephone Support

After years of insisting dealers are the best source for technical support, Compaq has decided to provide direct phone support to end users. Customers can now call Houston for answers to both run-of-the-mill and in-depth networking questions.

The plan "neutralizes any real or perceived advantages of other PC companies," says Doug Johns, vice president of corporate marketing. That's especially true at the high end, where the lack of a support line sometimes cost Compaq sales, concedes Johns.

Compaq offers free support via an 800 number to customers with complaints or problems related to stand-alone–PC usage. Those with high-end networking questions can get a contract covering ten "incidents" a year for $3000 and receive Compaq's CD ROM data base of technical notes and documentation. Dealers sell the pay-for-support plan, which addresses direct support in a cost-effective manner, says Seymour Merrin, president of Merrin Information Services, who notes that customers with complex networks don't mind paying for high-end support.

Dealers should be mollified by the opportunity to sell support contracts, says Merrin, particularly if that increases network sales. It was Compaq's commitments to dealers that delayed direct support for so long and left the company open to attacks by competitors like Dell Computer.

GORDON STUDER

NETWARE 386 UPGRADED

Mac, UNIX, Enterprise Connectivity Added

Novell helped cement its new alliance with IBM and extended its technological lead over *LAN Manager* by introducing a new version of NetWare 386 with ties to large IBM nets as well as long-awaited connections to Macintosh and UNIX environments. But some users may find themselves paying higher prices or buying features they don't need.

Version 3.11 of NetWare 386 supports the TCP/IP internet connectivity protocol and IBM's NetView management services as well as offering internet options for enterprise computing. Of more universal interest, the long-anticipated release of NetWare Loadable Modules (NLM) for Macintosh and UNIX workstations means that DOS, *Windows*, OS/2, Macintosh, and UNIX users can now transparently share information and resources such as print services between networks. Each type of workstation can maintain its own file-naming conventions and rely upon NetWare to sort out the differences. A new backup/restore NLM supports multiple-server backup and more than 50 third-party devices.

"Mac and UNIX connectivity has been an undelivered strategic component of NetWare 386," observes Steve Guengerich, editor in chief of the *NetWare Advisor* newsletter. "This is the death knell of NetWare 286, though it's not clear when that will come."

Still, notes Jamie Lewis, vice president of the *Clarke-Burton Report*, "they've raised prices and added functionality that smaller networks may not need." The minimum configuration for version 3.11 is a 20-user license for $3495; most nets are considerably smaller. "Why can't they have a lower-priced version of 3.11 without the TCP/IP and NetView support for smaller LANs?"

But the new features and the IBM alliance lead Lewis to conclude that "Novell has significantly raised the ante on *LAN Manager*. It's maintained its momentum and extended its technological lead."

TANDON CHALLENGES COMPAQ

Notebook, Ad Campaign Head U.S. Initiative

After years of being stymied by the U.S. PC market, Tandon Computer may have found the key: It promises March shipment of a notebook-sized portable that offers all the features of Compaq's top-of-the-line LTE 386s/20—and then some—but is about half the price.

As Tandon's ad blitz points out, the NB/386sx, at 6½ pounds, is a full pound lighter than the LTE; its 2MB of RAM can be expanded to 16MB, compared to Compaq's 10MB; and the 30MB version's $3495 suggested list price is about $3000 below the LTE's $6499 list (street prices may differ drastically). Tandon's NB/386sx also offers a desktop expansion unit like the LTE's, but for $299 rather than $1499.

The notebook is only the latest, although the most effective, brickbat in a price-comparison campaign that Tandon has been waging against Compaq since hiring longtime PC hand Graham Beachum as general manager last fall. Although based in Simi Valley, California, Tandon does nearly all its $422 million in sales overseas, and its periodic attempts to broaden its U.S. distribution have been largely unsuccessful.

Since he joined the company, Beachum has pursued a strategy similar to one that has paid off for Dell Computer—his alma mater. He has set up toll-free sales-and-support lines for single-PC purchases while using his extensive contacts to expand Tandon's national account sales. He has also landed mass distribution contracts with the INMAC mail-order catalog and 59 Walden Software stores.

Tandon's strong overseas base—a 68 percent increase in profits on record sales for the fourth quarter of 1990—makes it an unusual U.S. "start-up." But the notebook could be the star vehicle Tandon needs to bring its success "over there" over here.

GORDON STUDER

AMD SHIPS 386s

Second Source Could Augment Supply, Depress Prices, Put 32-Bit 386 on Laptops

Advanced Micro Devices will help to reverse the shortfall in 386-class processors by shipping "millions of dollars' worth" of its Intel 386DX clone in March and "tens of millions of dollars' worth" by July. Although AMD says buyers will be among the "top 20 PC makers" in the industry, analysts predict that many of the AMD parts will find their way to small clone makers that have to scramble for chips on the gray market.

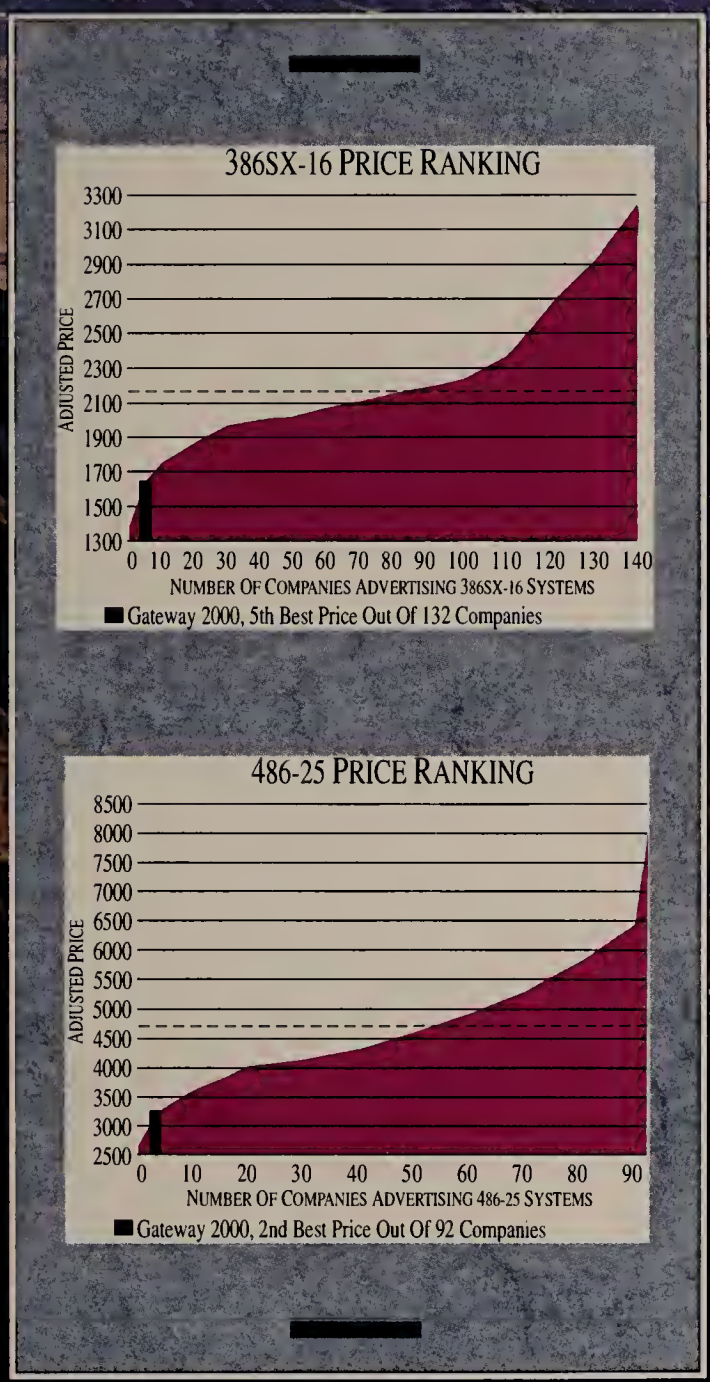
One such manufacturer is Joseph Chan, president of Spear Technology, which ships about 10,000 systems a year. Chan has to pay more than twice Intel's contract prices—more than $400 for small quantities of 25-MHz 386DX chips and nearly $200 for 386SXs on motherboards. Supply hasn't equaled demand forever," notes Dean McCarron, vice president at chip market researcher InStat.

The "top 20 PC makers" won't comment on AMD's plans, but AMD counts most of them as customers for its other motherboard components. They can get a 30 percent power saving simply by plugging AMD's 33-MHz Am386DX into their motherboards and up to 70 percent with a minor redesign, says AMD marketing manager Glen Burchers. Regardless of the outcome of litigation over trademarks and Intel microcode, AMD will offer a still more power-stingy 20- to 33-MHz Am386DXL by April. DXLs in smaller packages could bring a full 32-bit 386 compatible into laptops by summer.

Without committing itself, CompuAdd reports that the Am386DX tests 100 percent compatible with 24 popular software applications and seven operating systems when replacing the Intel 386.

As long as the shortage continues, Michael Slater, publisher of the *Microprocessor Report*, figures AMD prices will match Intel's. "In the long run, it could mean lower prices of 386 systems," he adds, "but in the best case, only $100 lower because PC margins are already so thin."

You Find The Best Values In The Most Unusual Places...



GATEWAY2000

"You've got a friend in the business."

...Like South Dakota, Where Gateway 2000 Customers Saved $10,747,179 In One Month.

*"We asked an independent research firm to do a study for us," said Ted Waitt, Gateway 2000 President. "I wanted to see an unbiased, direct comparison of features and prices from the manufacturers who advertise in the Computer Shopper. The results were astonishing," he exclaimed, "even to me. Ranked by best price, Gateway 2000 was the only major direct marketer at the top of the lists. The other 'big guys' in the direct market field were so far down in the rankings I couldn't even find some of them. Get a copy of the study and see for yourself."**

Ted Waitt, Gateway 2000 President

Computer buyers who purchased Gateway 2000 systems in January saved an average of $697 per system. This figure comes from a comparison of 132 computer manufacturers' advertised prices in the January 1991 issue of Computer Shopper. That means Gateway customers shared a total savings of $10,747,179 on 15,427 systems in one month alone.

No matter where you look, that's the best value you're going to find in this industry.

Providing The Best Value Starts With Values

"Whenever I'm asked," continued Ted, "why Gateway 2000 is so successful, my answer is: *value*. When you buy a Gateway 2000 computer, you're getting the best price, best quality and features, best service, all from a very strong, healthy company. That's value. Then I'm asked how we provide value," Ted remarked, "and the answer is almost the same. It's *values*. The values of the people at Gateway 2000 give our product its value," said Ted. "People who grow up in the Midwest value frugality, quality, resourcefulness, hard work, strength, and most of all, integrity and honesty in all dealings with other people. Providing value in our products starts with these values."

We Value Quality

Only the highest quality components go into a Gateway 2000 computer. Midwestern pride in workmanship and quality is demonstrated by every one of nearly 100 skilled assembly technicians. These technicians build your complete system one at a time.

We Value Strength

A company's strength is measured by its balance sheet. As independent sources will confirm, Gateway 2000 has an enviable balance sheet coupled with strong growth. Inc. Magazine listed Gateway as the second fastest-growing private company in America during 1990. Financial strength is crucial to you. What good are warranties, guarantees or promises of lifetime technical support if the company that sold you the computer goes out of business?

We Value Integrity

Integrity is the fundamental value without which any organization is doomed. At Gateway 2000, you'll find integrity throughout the company, most visibly in sales and customer support. Gateway salespeople honestly represent the company and its products. Each person you deal with in customer support, during and after the sale, has a personal commitment to make sure you're completely satisfied.

**Call our toll-free number for your free copy of this informative study of computer industry prices.*

We Value You

Gateway customer Robert C. True, Jr., writes: "We on the East Coast have become so accustomed to surly, uninformed and disinterested...staff, that working with your group may have induced an element of 'Culture Shock.' Every person in your organization operates as if there is only one customer in the world – the one they are talking to at the moment."

"You've got a friend in the business" is more than a slogan. It's our way of life here at Gateway.

Gateway 2000 Systems

12MHZ 286VGA

- 80286-12 Processor
- 1 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16 Bit VGA with 512K
- 14" Gateway Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

$1495.00

GATEWAY 386SX

- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16 Bit VGA with 512K
- 14" Gateway Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

$1895.00

25MHZ 386™ VGA

- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16 Bit VGA with 1 MB
- 14" Gateway Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

$2395.00

25MHZ 386CACHE

- 64K Cache RAM
- 4 MB RAM
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- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16 Bit VGA with 1 MB
- 14" Gateway Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

$2695.00

33MHZ 386VGA

- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16 Bit VGA with 1 MB
- 14" Gateway Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

$3195.00

25MHZ 486™ VGA

- 64K Cache RAM
- 8 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16 Bit VGA with 1 MB
- 14" Gateway Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

$3995.00

33MHZ 486VGA

Same configuration as the 25 MHz 486.

$4395.00

BEST BUY

Same features as our 33 MHz 386 VGA system except this machine has an 80 MB 17ms IDE Drive instead of the 200 MB 15ms IDE Drive.

$2795.00

STANDARD FEATURES & SERVICES

- Microsoft® WINDOWS™ and Mouse with all 386 and 486 systems
- 30-day money-back guarantee
- One-year warranty on parts and labor
- Leasing options now available
- Toll-free technical support for the life of the machine
- Free on-site service to most locations in the nation
- Replacement parts sent via overnight shipping free of charge
- Free bulletin board technical support
- New sales hours: 7am-10pm CST M-F 9am-4pm CST Saturdays

NEW CRYSTAL SCAN 1024NI

- Our new 14" Gateway Crystal Scan 1024NI color VGA monitor comes standard with all 386 DX and 486 systems. This monitor is non-interlaced for a flawless, flicker-free display. 1024 x 768 @ 60 Hz. 800 x 600 @ 72 Hz. 28 D.P.

We custom-build each Gateway 2000 computer to customer specifications. We'll gladly provide you with a quote on your configuration. 386 and 486 are trademarks of Intel Corporation.
Due to the volatility of the DRAM market, all prices are subject to change. Prices do not include shipping.

GATEWAY2000

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Where's Big Blue's Big Mo?

Has IBM lost the ability to set the pace of PC development? Here are four steps it can take to regain its leadership position—before it's too late.

The slide displayed two logos: Intel's on the left, Microsoft's on the right. Below them it contained a picture of an unmarked PC that looked vaguely like a PS/2.

It was a small detail at the January meeting where Microsoft unveiled its new *Windows* strategy to an audience of reporters and analysts, but it spoke volumes. (See *Industry Outlook* in this issue.) Microsoft officials didn't flash the slide; it came courtesy of Intel president Dave House, who used it to emphasize the chip maker's close working relationship with Microsoft. The effect was later said to be purely unintentional. Yet IBM itself never took the stage at the meeting, except in that slide.

Why does Big Blue appear to have lost its place as a unifying force in the PC industry and become instead a mere customer of the industry's new leaders—its chip and operating system suppliers? The most astute analysts believe the answer lies within IBM itself.

"IBM's fundamental problem is that it doesn't buy into personal computing," says *P.C. Letter* editor Stewart Alsop. "It doesn't buy into the notion that, in and of itself, having a stand-alone personal computer is a good thing. Instead, it keeps trying to modify the notion of personal computing to fit its worldview."

That problem was clearly in evidence after Microsoft's press meeting. While observers considered the event a major setback for IBM's campaign to popularize OS/2, IBM officials declared it would not affect its most important clients—the small number of large corporations that Big Blue is hoping will continue to purchase OS/2 for industrial-strength applications.

But even in big companies, PC leadership isn't measured by the number of OS/2 servers installed. It's measured in the only way that really counts—by the kinds of hardware and software that businesspeople demand and personally use. To win the contest by this yardstick, Alsop says, "IBM is eventually going to have to accept the fact that buyers have spoken and they like personal computing."

It's tough for a company that doesn't buy into personal computing to regain its leadership position.

How can Big Blue show that it got the message? Here are four simple steps IBM can take to convince everyone it understands and is serious about personal computing.

1. Think Small

When IBM reps use terms like "increased customer function" to promote OS/2 above *Windows*, it makes you wonder whether they're sharing the same planet with the rest of us who want PCs and software that are simple to set up and use.

Simple, elegant design isn't something nice to have but easy to forgo. It enables big companies to put PC power on every desktop without worrying about a crushing burden of support costs. In small companies, it makes the difference between having an officeful of PCs or none at all.

IBM has always geared its PC strategy toward connectivity with its big systems. That's why OS/2 is so big and complicated to use. Why not turn the tables on that proposition? Make the PS/2—not the mainframe—the cornerstone of the IBM computing strategy, and Big Blue's engineers will find a million ways to make its hardware and software simpler and easier to use.

2. Put OS/2 in ROM

Industry pundits are fond of saying that DOS with *Windows* is easier to configure than OS/2. But have you done any disk counting lately? To set up DOS and *Windows*, you will run through 11 3½-inch disks; to set up OS/2 Extended Edition, you will go through about 15. Can anyone honestly say that *either* one of these environments is simpler to con-

(continues)

FRED STIMSON

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Circle 153 on reader service card

figure than the other?

The solution to this problem is pretty obvious. Put OS/2 in the PS/2's ROM, and users will boot up instantly every time into the most advanced PC operating system around. Then license that capability to every other system maker, and just watch how they will rush to support it.

3. Make Network-Ready Multimedia PCs

IBM puts neither networking nor sound capabilities into its PCs, on the premise that users should be able to choose whether they want to pay for these features. But when you consider the economies of scale that Big Blue would achieve by making them standard equipment, those excuses sound rather hollow. If every software developer could bet on the presence of these basic capabilities in every PS/2, then the PS/2 would become the most exciting PC platform for which to develop new software.

4. Pick an Interface, Any Interface

By last count, IBM supports about six graphical user interfaces: Presentation Manager, OSF Motif, NeXTstep, Go's PenPoint, Patriot Partners' unannounced software, and the PS/1's graphical shell. Enough already! Certainly there are plenty of good ideas to be found in all these environments to make *Windows* look anemic by comparison. Now's the time for action, not more acquisition.

Note that Big Blue doesn't have to go out and buy or invent anything new to instantly distinguish itself from the pack of PC vendors and once again grab the attention of the software community and users. All it takes is a little daring—and the willingness to think like a PC company, at long last.

As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World*, 501 Second St. #600, San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685.

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* Based on US dollar market share of competitive models for the 12 months ending December, 1990, as reported by InfoCorp (1/91)

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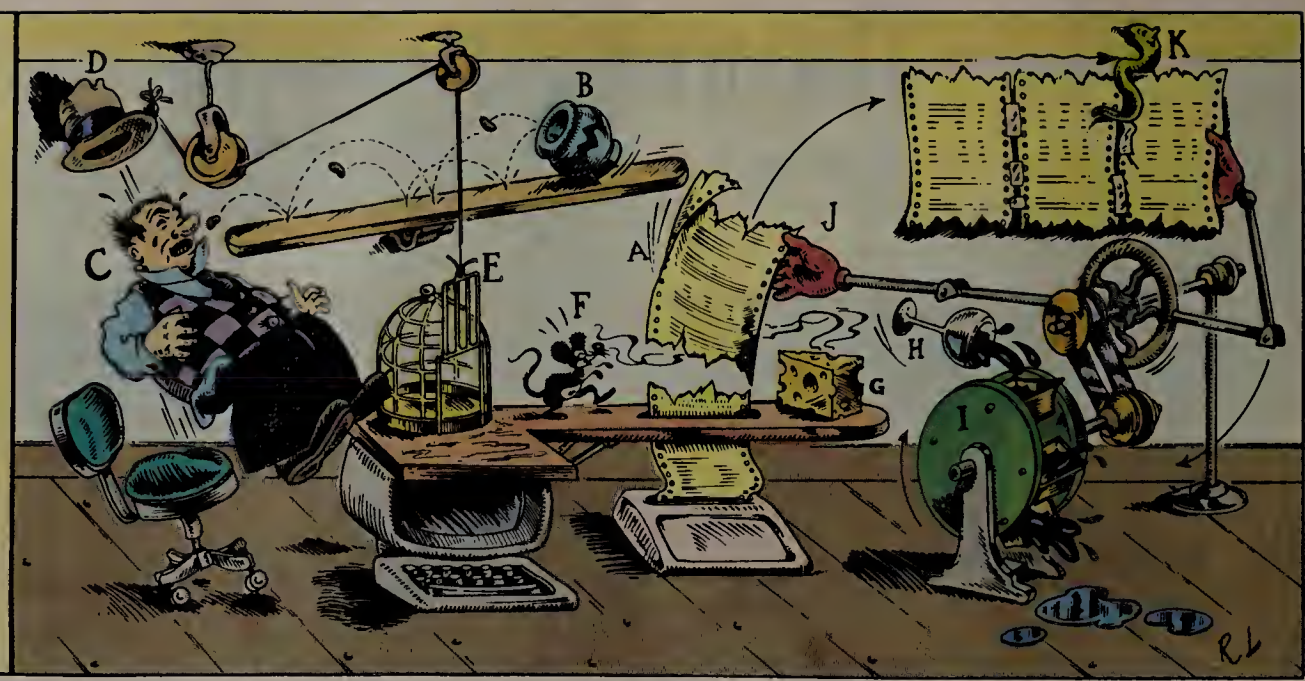
RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBOBULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM (K).



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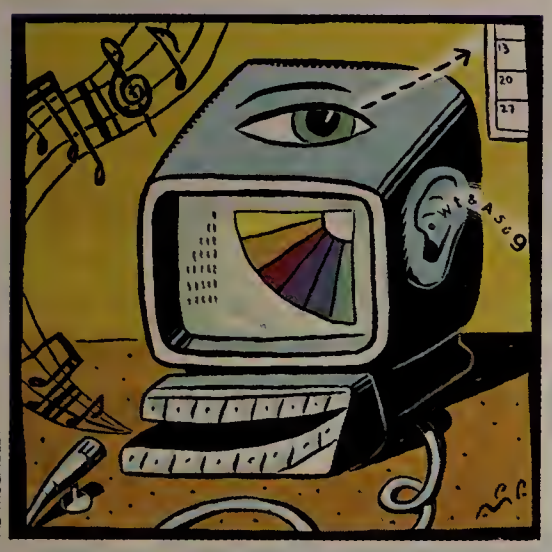
Sideways version 3.3 works with all releases of 1-2-3 as well as other software. Add-in capability requires 1-2-3 Release 2, Release 3, or Symphony.

Circle 148 on reader service card

LETTERS

Reactions and responses from the PC World community



AD McCAULEY

Viewing Multimedia

I was impressed with Richard Landry's January column about multimedia. When I purchased my computer, the salesperson made it sound as if it would do everything. But within a year it was outdated. Landry's plain-English explanation of what's out there was a breath of fresh air. Keep the good articles coming.

Betty Bauer
Oxnard, California

Mr. Landry is correct that the PC isn't yet ready for multimedia. My Amiga 2000 came multimedia-ready for around $2000. It captures and plays back digitized sound and attaches easily to CD ROM drives, video recorders, scanners, and musical keyboards. Don't get me wrong; I work with DOS computers daily, and they're good machines. But give the Amiga credit where it's due. Trust me—when you see an Amiga running incredible graphics and sound with Mac and DOS applications running in background windows, you have to agree that the Amiga is to be taken seriously.

Jerry Foster
Oxford, Michigan

Tips Worth a Subscription

Over the past several years, I have noticed that computer magazines in general have started to run out of ideas for articles. Your recent issues show that you have realized the problem and done something about it. The information in January's "101 Secret Tips" was marvelous. In fact, I found the *Windows 3.0* tips alone worth the price of a subscription—so I've given one to my father. I hope you continue your hands-on ideas for getting the most out of an increasingly complex array of software.

John E. Johnson, Jr.
Redwood City, California

Encouraging Piracy?

As a consultant and programmer, I was appalled to read November's *Network Q&A*. A reader requested advice on how to allow multiple users to share single-user applications on a network. He stated, "While network versions are available, upgrade charges are prohibitive." Your mild notice advising users not to violate the software license came after a description of how to violate it. This is an obvious example of a publication encouraging its readers to violate license agreements.

Michael Sullivan
Virginia Beach, Virginia

The reader's statement that he wished to recover local disk space used to store multiple copies of programs indicated that he had a copy for each user. In many cases, consumers have spent far more on multiple copies of an application than they would have on a network version. There's no reason why users should be forced to purchase network versions just to use legally registered products on their networks. We not only advised against violating license agreements, we also gave information on preventing illegal use when the number of workstations exceeds that of licenses. —Ed.

BBS File Resources

What happened to the *PC Resource* BBS files? Are they still available?

Theodore C. Trostle
State College, Pennsylvania

To obtain programs and utilities formerly available on the PC Resource *BBS, contact Bonnie Welsh-Carroll, IDG Communications/Peterborough, 80 Elm St., Peterborough, NH 03458; 603/924-9471, 603/924-9384 (fax). Call or write Debby Bourgault at the same address to inquire about back issues and a small inventory of special products from the Tips, Tools, & Techniques and Essential DOS issues. Make sure to include your phone number with all communications to facilitate the discussion of fees. —Ed.*

Making Windows Work Better

We'd like to refute the implication in November's "Thanks for the Memory" that there's no benefit in using *Super PC-Kwik* with *Windows 3.0*. Version 3.56 and later versions are all *Windows*

(continues)

ANTHONY RUSSO

compatible. We recommend disabling *Windows'* SmartDrive and using *Super PC-Kwik* for a substantial performance improvement. *Super PC-Kwik 3.35* was a Best Buy in February 1990. Today's *Super PC-Kwik 4.0* lends memory to *Windows* and DOS applications and lets *Windows* switch between cache buffering and program functions as needed.

John P. Davis
Vice President, Marketing
Multisoft Corporation
Beaverton, Oregon

I was surprised to see "Thanks for the Memory" imply that Quarterdeck's *QEMM-386* memory manager is a "dangerous utility" and a "troublemaker" when used with *Windows 3.0. QEMM-386 5.11* works well with *Windows 3.0* in all modes and provides much more usable memory for non-*Windows* applications running under *Windows.*

Mark D. Freeman
Columbus, Ohio

Mr. Davis and Mr. Freeman are correct: There's no reason to forgo the use of good third-party utilities with Windows 3.0. *We regret the implication. While many users find everything they need with* Windows 3.0, *advanced users may prefer compatible third-party utilities. —Ed.*

Making Procomm Windows-Friendly

Your tips are *very* helpful, but Judy Heim's January hint "Making Procomm Windows-Friendly," on page 173, left me confused. I found the mentioned PIF file with my copy of *Procomm Plus 1.1* and installed it. But I couldn't get *Procomm* to work with *Windows 3.0.*

Daniel Knowles
Falmouth, Maine

A misprint added to the confusion. Procomm Plus 1.0–1.1b *comes with PIF files for* Windows 2.*x, not version 3.0. If*

(continues)

POWER TIP NO. 170

No-Sweat WordPerfect Line-Height Adjustments

In *WordPerfect 5.0* and later versions, if line height is set to Auto, you can advance up or down a quarter or half a line without manually measuring line height and calculating the fractional amount. Press <Shift>-<F8>oa. Type u for up or d for down, and enter .25u for a quarter line or .5u for half a line. Regardless of the point size, these unit amounts are converted automatically to the units of measurement you have selected under Setup.

Jeff Steimach
San Francisco, California

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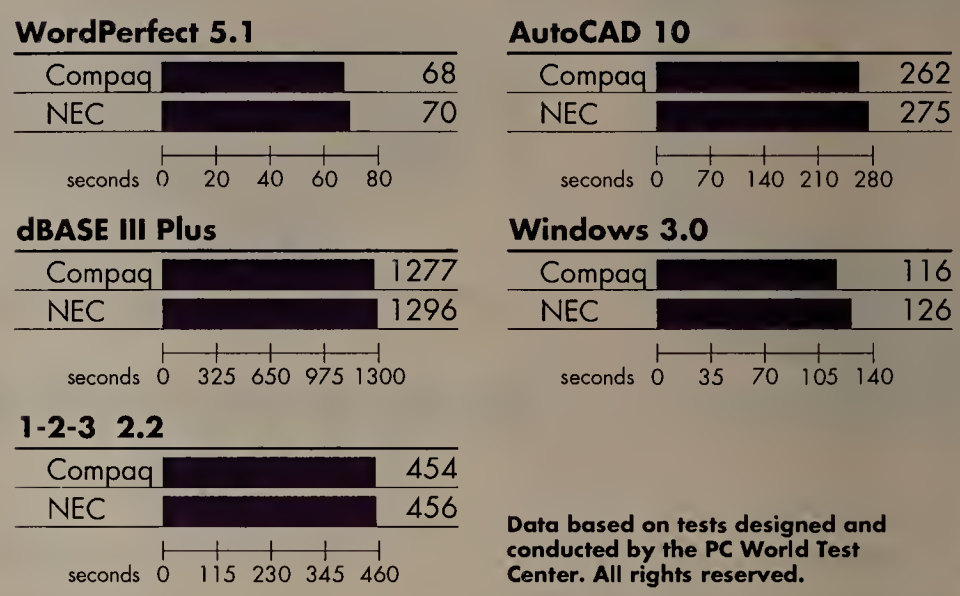
PC WORLD TEST REPORT

Oops! NEC's 386 Earns Rematch

Anomalous benchmark results led to a Fair performance rating for the NEC PowerMate 386/25S in our December roundup. A retest left the machine only a couple of points behind the top-rated Deskpro 386/25e.



Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

you install Windows 3.0, *it will recognize* Procomm *and write a PIF file for you. If you already have* Windows 3.0 *installed, use* Windows' *setup menu to create a PIF. —Judy Heim*

Second Look: NEC PowerMate 386/25S

Our December 1990 review of the NEC PowerMate 386/25S ("25-MHz 386s: Great Performance in a Small Box") did not accurately reflect the performance of the system. We inadvertently chose a dBASE III Plus *test that misrepresented the speed of the NEC's hard disk. A recent retest with a more representative suite of benchmarks shows the PowerMate 386/25S running only a few percentage points behind the top-rated Compaq 386/25e. This raises its performance rating to Excellent. The overall value rating, however, remains the same: Good.* PC World *regrets the misleading performance rating.*

NEC recently released an IDE drive for the PowerMate 386/25S, although not in time for testing. The drive uses a built-in controller, which frees up a slot. PC World *will offer a look at this new NEC PowerMate 386/25S in a future roundup.*

Corrections and Clarifications

Our December buyers' guide "Displays That Outshine VGA" listed an incorrect fax number for Headland Technology. The correct fax number is 415/657-4604.

The January *Letters* column misprinted the phone number for the Manatee PC Users Group, 411 67th St. NW, Bradenton, FL 34209. The correct number is 813/792-3437.

A font sample chart on page 131 in

(continues)

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January's "Easy Fonts for Great-Looking Documents" contains two inaccuracies. Zenographics' *SuperPrint 1.0* doesn't support dot matrix printers; the wrong type sample was shown. Agfa's *Type Director 2.0* produced 12-point instead of 24-point type on the Hewlett-Packard DeskJet 500 due to conflicts with *Word for Windows'* font installer. To print large fonts on the DeskJet using *Type Director* and *Windows 3.0,* you must download the fonts before printing or obtain HP's DeskJet *Windows* driver.

The Features Evaluation in our January fonts review also contains two errors. Z-Soft's *SoftType 1.01* accepts third-party font outlines and does support the LaserJet III and IIID printers. *PC World* regrets the errors.

Send your reactions, responses, and ideas to Letters, PC World, *501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your name, the name of your city and state, and your phone number. We reserve the right to edit letters.*

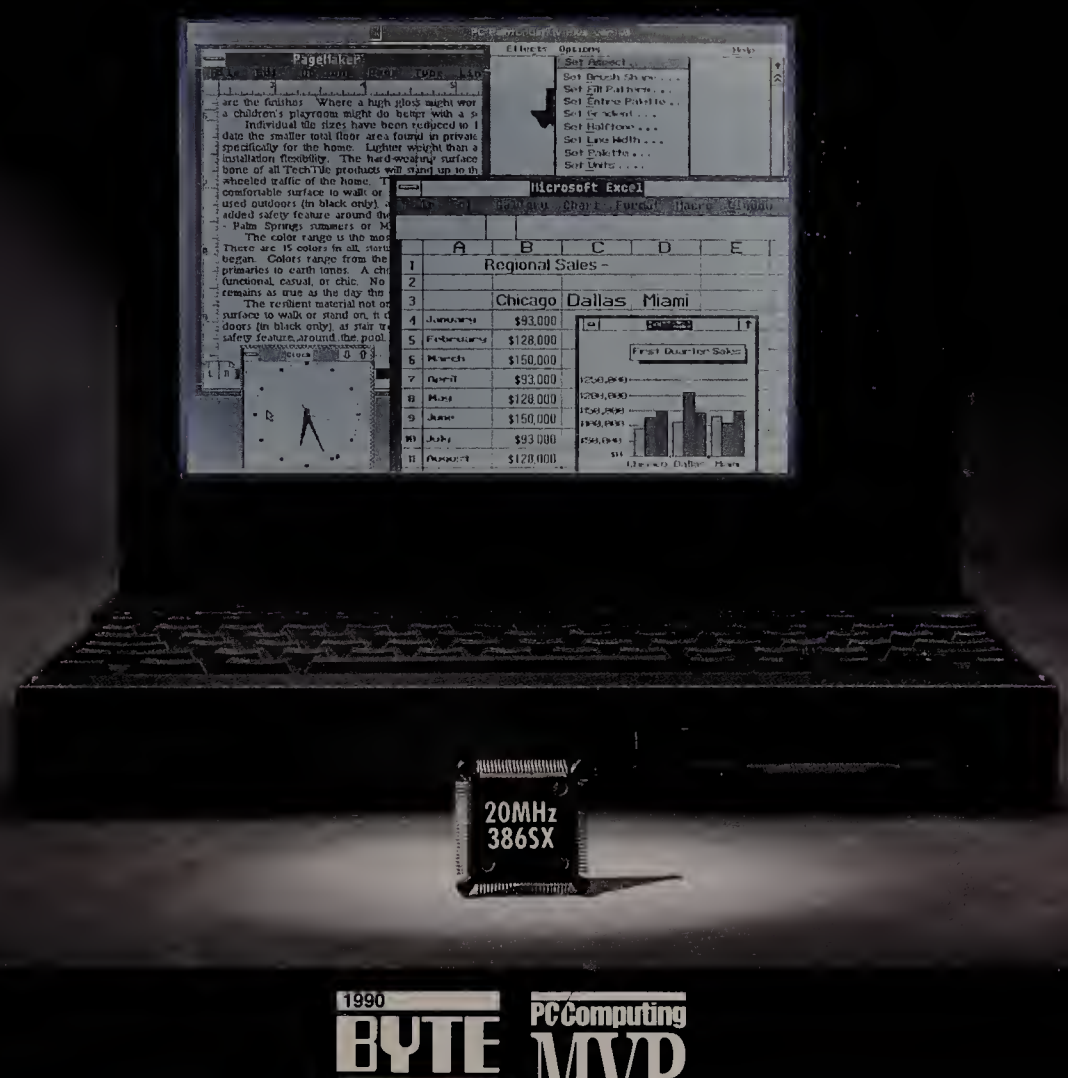
POWER TIP NO. 171

Getting Past the Windows 3.0 Logo

You can get into *Windows* quickly and bypass the opening screen. Just type `win` followed by a space and the executable file name of any program you want *Windows* to run that isn't listed in your WIN.INI. If you have nothing for *Windows* to run, type `win` followed by a space and a colon.

Greg Smela
Pittsford, Vermont

The new look of power just got more powerful.



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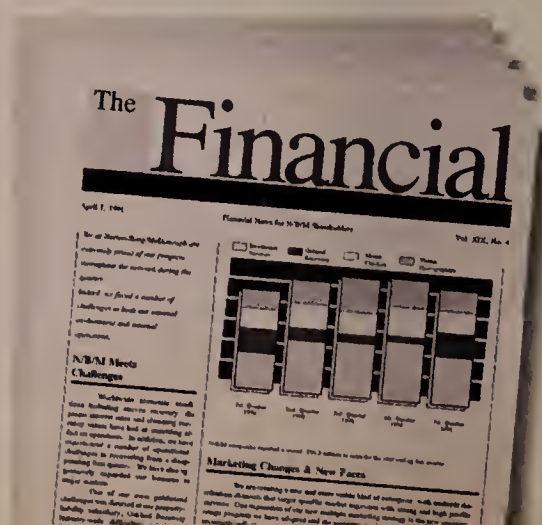

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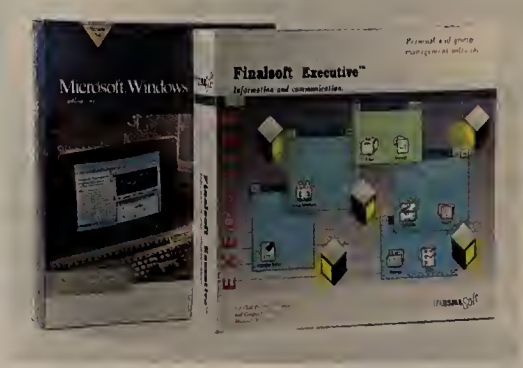

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Circle 84 on reader service card

THE HELP SCREEN

PC World offers answers and advice at every level

Super-VGA monitors can handle XGA, memory on the cheap, upgrading an XT, PostScript and the HP LaserJet, modifying the keyboard for users with disabilities, and making peace between NetWare's system and user log-in scripts.

Karl Koessel and Robert Lauriston

XGA and Super-VGA Monitors

Q. *Is the new XGA standard compatible with existing 1024 by 768 monitors like the NEC MultiSync 4d? Although prices on these large-screen, enhanced-resolution monitors are finally getting down to a reasonable level, we don't want to invest in yesterday's technology at premium prices.*

Michael E. Rountree
Mendham, New Jersey

A. Any 1024 by 768–capable super-VGA monitor can handle XGA's interlaced 1024 by 768 mode, which, as far as the monitor is concerned, is identical to the 8514/A board's. ("Interlaced" means the electron beam sweeps across the first of the screen's 768 horizontal scan lines, then the third, then the fifth, and so on down the screen, and returns to the top to sweep the second scan line, then the fourth, refreshing the even scan lines as the odd lines fade and vice versa.) In addition, any super-VGA or standard VGA monitor can handle XGA's 640 by 480 16-bit color mode.

Some other super-VGA boards, like the Video 7 VRAM, have a noninterlaced 1024 by 768 mode (scan lines are refreshed one after another from top to bottom), which some high-resolution monitors can't handle. Most third-party XGA-compatible boards are likely to run noninterlaced (at least optionally) to reduce flicker.

Another consideration is that many new video boards have boosted their refresh rate from 60 Hz to 72 Hz to reduce eyestrain and meet European standards. To keep future options open, look for a monitor that can handle noninterlaced, 72-Hz refresh, 1024 by 768 video. (Check the multiscan monitors Buyers' Guide [December 1990, page 212] to see which monitors can handle which modes.)

Can I Use SIMMs?

Q. *Can I use regular SIMMs in place of the proprietary memory expansion modules from ALR, Compaq, and other companies?*

Kenny Eng
New York, New York

A. Unfortunately, you can't substitute inexpensive SIMMs for proprietary memory modules. However, there are compatible third-party memory modules that cost quite a bit less than the system manufacturers' products. There are also less expensive clones of proprietary memory boards for many popular systems, and some of these will take SIMMs. If your dealer doesn't carry such products, check out the mail-order suppliers that advertise in the back of this magazine.

You could also buy a SIMM-based memory board that slips into an expansion slot, but it's usually a bad idea. In a 386 or an 8-MHz or faster 286, memory installed on the expansion bus won't run as fast as the proprietary modules, which use a special "fast slot" that runs at the same speed as the CPU.

Luckily, this upgrade headache will soon be a thing of the past. Most companies, including ALR and Compaq, are using SIMMs in their new system models.

Upgrading an XT

Q. *As I get more involved in desktop publishing, I find I've outgrown my old Epson XT compatible and its 20MB hard drive. Manufacturers are making programs that come only on high-density disks and require more than 640K of memory. Several people have told me I can upgrade the system by installing a BIOS upgrade, a 1.2MB floppy drive, a memory expansion board, and a math coprocessor. Others say I need to replace the motherboard. Epson sent me an ad for an Intel Inboard. Which way should I go?*

Terry Austin
Fresno, California

A. Don't sink more money into your old system. True, a new BIOS, controller, and floppy drive would enable your old system to read high-density disks. And if you also added an expanded memory

(continues)

ANTHONY RUSSO

board, you'd be able to use *Ventura* or *PageMaker* to produce fairly large documents. But the XT would run such packages so slowly that you wouldn't want to use them. You need at least a 286-based system, but we suggest you upgrade to a 386 instead. *Windows* runs better on a 386, and if you buy a 286 you may find you've outgrown your system again all too soon.

Intel's Inboard 386/PC will upgrade your system to a 386—sort of. The board replaces the XT's 4.77-MHz 8088 CPU with a 16-MHz 386 processor, but it uses the same slow, 8-bit XT bus. That means you couldn't use faster 16-bit boards, and your hard disk wouldn't run as fast as in a real AT compatible. The Inboard is also limited to a maximum 5MB of fast RAM. Worst of all, it's not fully AT compatible—for instance, it needs a special version of *Windows*. Consequently, we don't recommend the Inboard upgrade path.

A computer shop may be willing to convert your XT to a 386 via a motherboard swap. You'd also need new floppy and hard drives (40MB is cramped for *Windows*), and (unless the new motherboard has one built in) a new disk controller, too. We're not enthusiastic about this approach, but if the shop gives you a one-year guarantee on the whole upgrade it's worth considering.

We think you'd do best to buy a whole new system. It wouldn't cost that much more than a motherboard swap, and you could recoup part of the cost by selling your old XT. We recommend a 20-MHz 386SX with an 80MB or larger hard disk and 4MB of memory, plus enough empty SIMM sockets on the motherboard to let you upgrade later to 16MB. And while you probably don't need a math coprocessor (used for floating-point calculations, like redrawing CAD screens or recalculating large spreadsheets), you may want one later if you start using scalable fonts regularly.

POWER TIP NO. 172

Fast WordPerfect Dot Leaders

Want margin-to-margin leaders (.....) to, say, make flush-right text stand out? In *WordPerfect 5.1*, just press <Alt>-<F6> twice. *WordPerfect* will move the cursor flush right, automatically add the dots, and await your text input.

James Hopkins
WordPerfect Technical Support
Orem, Utah

PostScript and the HP LaserJet

Q. *Can you tell me the benefits, if any, of buying a PostScript cartridge for my HP LaserJet IIP? I understand I*

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could proof jobs that will eventually be output on a Linotronic. Would graphics or scans be improved? As of yet I don't have any programs that rotate or curve type, but Corel Draw *is in future plans.*

Bob Ulius
Oakland, California

A. The greatest benefit of a PostScript printer is that you can proof pages at 300 dpi, then send the file to a laser parlor for 1270-dpi Linotronic output, knowing it will be an almost perfect match. That confidence and the broad selection of PostScript fonts are the main reasons that layout artists and professional desktop publishers use PostScript.

Scanned graphics are bit maps and won't be improved by switching to PostScript. Bézier curves, produced by draw programs like *Corel Draw* and *Adobe Illustrator*, will print better—sometimes much better—with PostScript. EPS (Encapsulated PostScript) graphics, exported by some graphics programs, won't print at all on a non-PostScript printer.

PostScript lets you scale fonts to virtually any point size, but now you can get scalable fonts from various non-PostScript font utilities as well. Some, like *Adobe Type Manager*, can even scale PostScript fonts on a non-PostScript printer.

On the downside, switching to PostScript will slow down your LaserJet. Considering the performance hit, the cost of the cartridge, and the extra printer memory required, your best course is to hold off upgrading to PostScript until it solves a specific need, such as the ability to proof pages for later Linotronic output.

Different Keystrokes for Different Folks

Q. *I train the physically challenged in*

(continues)

POWER TIP NO. 173

Watch Those WordStar Wild-Card Deletes!

WordStar Professional 4.0 and later versions allow you to make wild-card deletes in the DELETE dialog box (Y at the Opening Menu or <Ctrl>-KJ from within a file). But the delete function uses DOS-level commands, and if you enter *.*, you will delete every file in the subdirectory, not just the subset that shows on screen by default. So if you have EXE and other application files in the logged directory, be cautious with your wild-card deletes.

Rex Farrance
Assistant Editor

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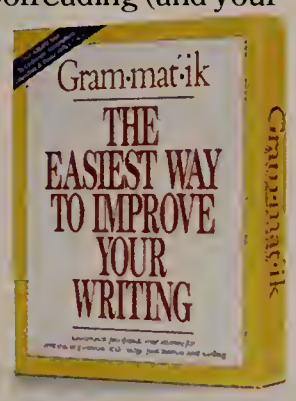
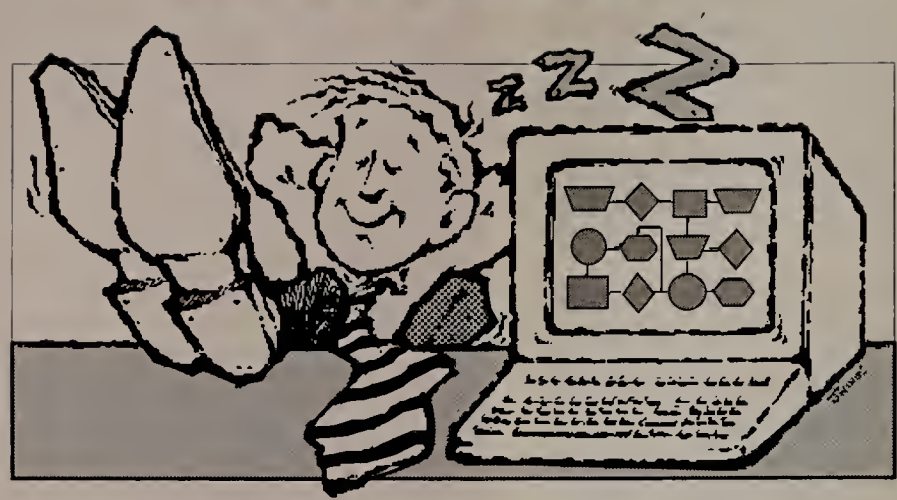


Circle 282 on reader service card

Shh!



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Circle 79 on reader service card

computer literacy. Many of my clients can use only one hand—some only a single finger— which makes it difficult or impossible to use <Alt>- and <Ctrl>-key combinations. Is there software that will make these keys work like <Caps Lock>, staying on until pressed a second time to shut them off?

Arvin Chaikin
Bellingham, Washington

(continues)

POWER TIP NO. 174

Speeding Modem Dialing Through Office PBXs

If you have a nonstandard dial tone on your office phone system, you may have to tweak your modem's attention (AT) command strings. Go to your communications software setup menu, and under modem setup find the strings that begin with AT. To the modem's initialization string (the longest string), add S6= and then type a number that's larger than 2 and approximately equal to the number of seconds the modem will have to wait for an outside line. Setting the S6 register forces the modem to stop listening for a dial tone after the specified number of seconds and dial without it. You can further speed dialing after the modem gets an outside line by adding W to the tail end of the command string that begins *ATDT:* This sets the modem to dial the phone number immediately once it hears a normal dial tone rather than wait the entire duration set by register S6.

Judy Heim
Contributing Editor

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Circle 265 on reader service card

A. One memory-resident program, *HandiShift* from Microsystems, does exactly what you describe, no more, no less. General-purpose macro programs like *SmartKey* and *ProKey* also enable you to make the <Alt>, <Ctrl>, and <Shift> keys "sticky." In addition, custom keyboards and keyboard extensions can handle this task without special software. There are also input devices for those without the dexterity required to use a standard keyboard. For information on other such products, contact the following companies or check out CompuServe's special forum for the disabled (GO HANDICAP).

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Framingham, MA 01701
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508/875-8009 (BBS)
LIST PRICE: $49
Reader service no. 608

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Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.

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POWER TIP NO. 175

Shape Up Those Windows Group Icons

Can't straighten up the group icons in the Program Manager window with the Window Arrange Icons command? Select one of the Program Manager's group icons (not a program icon like those in the Main window), and then issue the Arrange command. The pesky devils will line up instantly.

Robert Luhn
Contributing Editor

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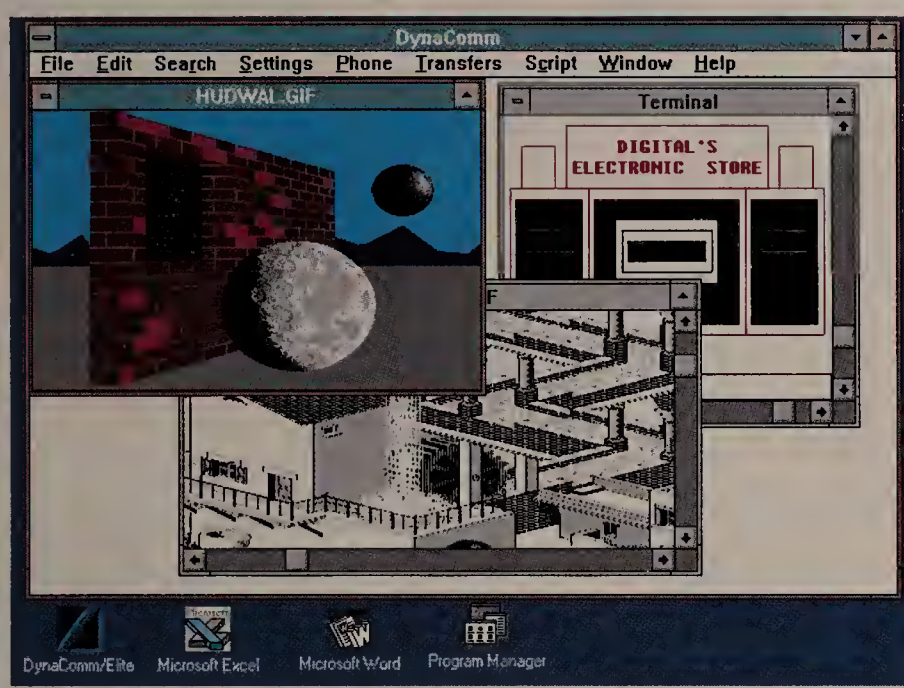
Circle 122 on reader service card

"DynaComm is an example of what a great Windows program is all about."

–PC Week — Product Review

The word is out. On January 28, 1991, three asynchronous communications programs written specifically for Microsoft Windows 3.0 were reviewed by PC Week Labs. The analysts' choice was unanimous. For number of terminal emulations, ease of data transfers, quality of documentation, effective use of Windows interface, price relative to performance, and ease of installation and configuration, FutureSoft's™ DynaComm® was the hands-down winner.



"Beginning users will appreciate how easy DynaComm is to use, and the slick, ready-to-use interfaces it has for many on-line services. Experts and communications consultants should value its DDE capabilities and the ability to hide any trace of DynaComm from the user."

PC WEEK LABS ANALYST'S CHOICE
DynaComm 3.0
January 28, 1991

DynaComm's powerful script language allows you to do everything from automating frequent tasks for remote services to creating custom front-end applications for mainframe day-to-day activities which take full advantage of the Windows interface. DynaComm can also access other Windows applications through its script language using Dynamic Data Exchange (DDE) or Dynamic Link Library access (DLL).

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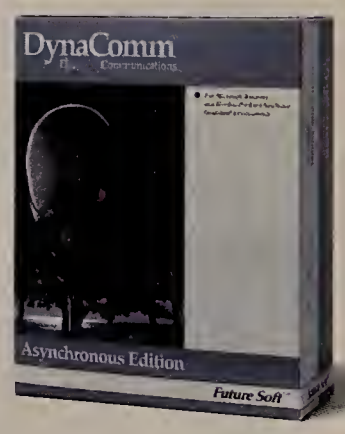

To anyone considering asynchronous communications software, the PC Week Analyst's Choice said it best. For ease of use, powerful scripting language and more, only one package warrants serious consideration–DynaComm.

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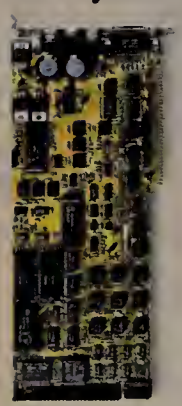

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NETWORK Q&A

Make Peace Between NetWare's System and User Log-In Scripts

Keith Nickerson

Q. *I am having problems getting my NetWare system log-in script to consistently do what it is supposed to do. For some people the log-in script executes exactly as expected, while for others it doesn't.*

For example, I have two lines in my system log-in script: WRITE "GOOD %GREETING_TIME, %FULL_NAME" and WRITE "TODAY IS %DAY_OF_WEEK, %MONTH_NAME %DAY".

For most users, these commands work fine, producing a result like this:
GOOD MORNING, JIM CARROLL
TODAY IS MONDAY, MARCH 27

Others using the same system log-in script see the following output:
GOOD MORNING, JIM CARROLL
TODAY IS MONDAY, MARCH 27
GOOD MORNING, JCARROLL

I understand that NetWare provides a default log-in script that would write a message like the third additional line if no system log-in script were present. But there is a system log-in script. What's going on here?

Jim Carroll
New York, New York

A. You're on the right track when you mention the default log-in script, but you're not exactly right about when it kicks in. NetWare runs the default log-in script (shown in **LISTING 1**) when there is neither a system log-in script nor a user log-in script, or when there is a system log-in script but no user log-in script.

It sounds like your setup fits the second case. If you check to see which users are experiencing the problem, I bet you'll find they don't have individual user log-in scripts.

What's happening is that NetWare first looks for, finds, and executes your system log-in script. NetWare then looks for the user's log-in script, fails to find one, and, finally, executes the default log-in script instead. As a result, the default script is being appended to your system log-in script just as a user script would be.

The default script can cause problems more severe than a scrambled greeting, however. For example, if your system log-in script MAPped the first search drive to something other than SYS:PUBLIC, that mapping would be overridden by the default log-in script.

So what can you do to prevent the default from executing when a user doesn't have an individual log-in script? The most elegant solution is to create a group of users called something like HAVE_LOGIN_SCRIPT, which, logically enough, includes all those who have log-in scripts. Then add the line IF NOT MEMBER OF HAVE_LOGIN_SCRIPT THEN EXIT to the end of your system script.

Thereafter, when users log in, NetWare will check to see who belongs to the HAVE_LOGIN_SCRIPT group and who doesn't. The EXIT command will prevent execution of the default log-in script for those who don't belong to the group, while the IF statement will skip over the EXIT command for those who do, allowing their personal scripts to run as usual.

Alternatively, you could create a "dummy" personal log-in script for each user. The advantage of this approach is that users can create their own log-in scripts when needed, without having to contact the supervisor to be added to the HAVE_LOGIN_SCRIPT group. This dummy script can be as brief as a single space character (that is, one blank), but it's smarter to use a short WRITE command, like WRITE "USER LOGIN SCRIPT EXECUTED." That way, you can see for certain that the user log-in script was executed, which makes any later troubleshooting much easier.

A more radical solution is to place an EXIT command at the end of the system log-in script. This will prevent execution not only of the default but also of individual user log-in scripts. You should use this method only if you want to prevent all users from creating their own log-in scripts.

If you know the sequence of NetWare log-in script execution and follow these tips, you should be able to prevent the default from mangling the effects of your system log-in script.

Keith Nickerson is the editor of NetWare Advisor *and a member of the publishing team at Business Systems Group, a Houston-based systems integration firm.*

```
WRITE "Good %GREETING_TIME, %LOGIN NAME."
MAP DISPLAY OFF
MAP ERRORS OFF
Remark: Set first drive to the most appropriate directory.
MAP *1:=SYS:;*1:=SYS:%LOGIN_NAME
IF "%1"="SUPERVISOR" THEN MAP *1:=SYS:SYSTEM
Remark: Set search drives (S2 machine-OS dependent).
MAP S1:=SYS:PUBLIC;S2:=S1%MACHINE/%OS/%OS_VERSION
Remark: Now display all the current drive settings.
MAP DISPLAY ON MAP
```

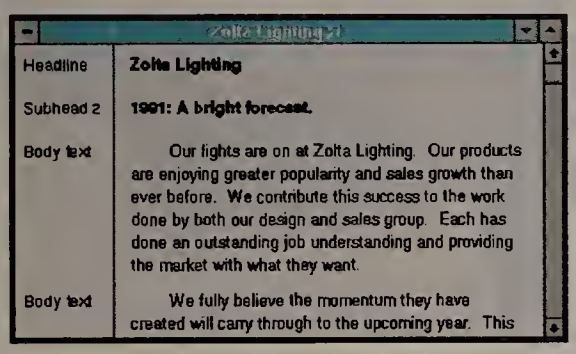
LISTING 1: If you don't have a user log-in script, NetWare runs this default log-in script.

† Adobe Type Manager is included free with PageMaker until July 31, 1991. †† Offer good in U.S. and Canada only, void after 12/31/91. This ad was created with Aldus PageMaker. The following are registered trademarks of the companies listed--Aldus, the Aldus logo, PageMaker:

PageMaker 4.0 for Windows. Today is the first day of the rest of your PC's life.

A new day has dawned in the world of desktop publishing. That's quite a statement. But then, it's not every day a program like Aldus PageMaker® 4.0 for Windows™ comes along and makes publishing easier, quicker and more accurate than ever before.

To start with, you'll find our new Story Editor. Now you can rapidly enter and edit text, check your spelling, search for and replace words, fonts, point sizes, and styles without ever leaving PageMaker.

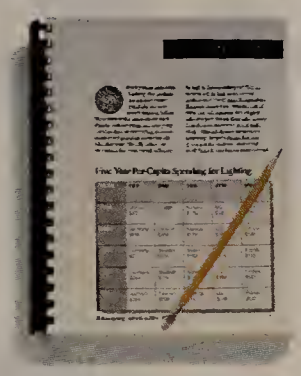


The new Story Editor gives you full-fledged word processing capabilities—enter and edit text, check spelling, and search and replace, right in the program.

Need to create a long document? New PageMaker is a specialist. Using the new Book feature, you can combine files to create documents the length of *War and Peace.* Then, automatically, renumber all pages, generate a common table of contents and index, and chain-print. All of which helps you make short work out of long documents.

PageMaker supports 24-bit color TIFF images, and color EPS, and includes a library of PANTONE®* Colors.

And you know how crazy last-minute changes can make you. Did they make it in, or didn't they? Worse yet, what about the changes your network partners made? Well, the new Links management lets you automatically update your document with the latest versions of text, spreadsheets, databases, and graphics.



The new Table Editor is dynamically linked to PageMaker, and makes tables easy. Plus, any graphic can be tied to specific text so the two stay together in your document.

Of course, PageMaker has always made your documents stand out visually. And now, with the ability to expand or condense type, rotate it 90°, and wrap it around irregular objects, your work will stand out even more. Plus, PageMaker now gives you true typographic track kerning– or you can kern type between pairs or over a range of text to 0.01 of an em space.

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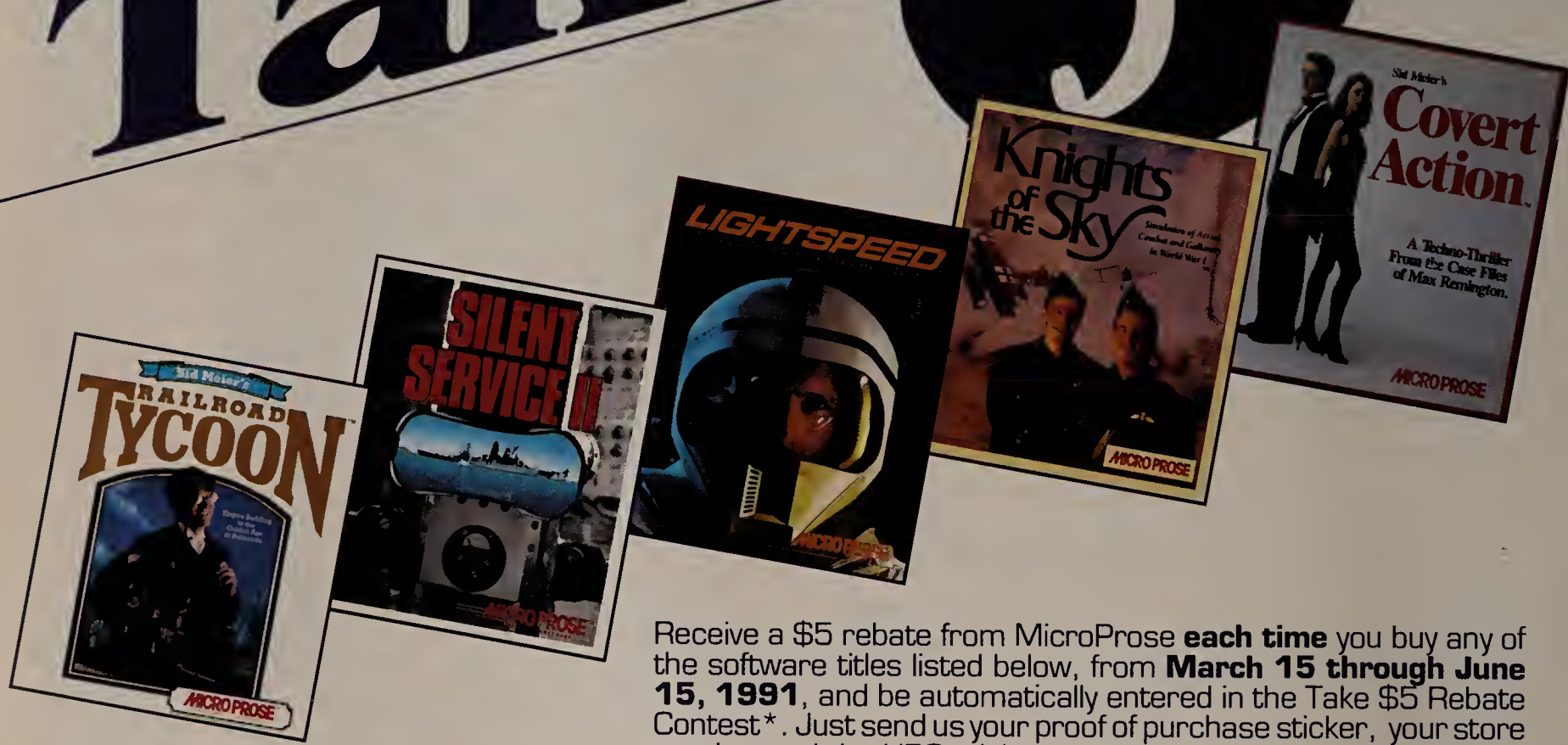

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Circle 160 on reader service card

CONSUMER WATCH

Advice and information for the computer consumer

When personal information becomes public property, consumers can and do fight back.

Roberta Furger

Are PCs Invading Your Privacy?

The widespread availability of on-line and CD ROM data on prospective customers is great news for businesses looking to enter new territories or to introduce products or services. But for many consumers, that same free flow of information—*personal* information about themselves and their families—represents an invasion of privacy.

Consumer anger and concern about this issue reached fever pitch last year when Lotus Development and Equifax announced plans to release *Marketplace: Households,* a set of CD ROMs that would provide businesses with names, addresses, and demographic information for 120 million consumers throughout the United States. Individual consumers and privacy groups alike were horrified at the notion that for a fee, businesses would be able to bombard them with direct-mail solicitations—in most cases using information that consumers had provided for credit purposes.

The concept behind *Marketplace* was not new. For years credit bureaus such as Equifax, TRW, and Trans Union, along with at least 200 smaller bureaus, have been making selective pieces of credit-generated information available to direct marketers. Clients simply specify the type of consumer they want to target—men between the ages of 35 and 40 who have $10,000 of available credit on their credit cards, say—and for a fee they receive a list of names and addresses that match that profile.

But Lotus was the first PC software company to try to bring that level of information within easy reach of small businesses via their desktop computer. (Although a variety of on-line data bases provide demographic information, few supply users with household-level information.) And it was this innovative—and controversial—plan to broaden the base of potential direct marketers that brought down the wrath of consumers on Lotus and Equifax.

Over 30,000 consumers, in fact.

That's how many calls and letters Lotus received from individuals demanding that their names be removed from the disks. An unknown additional number sent similar letters to the Direct Marketing Association (DMA), which also processed name-removal requests.

In fact, the outcry from individuals and consumer groups was so deafening that Lotus and Equifax jointly decided to cancel the product in January. "Unfortunately, *Marketplace: Households* is at the apex of an emotional fire storm of public concern about consumer privacy," said Lotus president and CEO Jim Manzi. "While we believe the actual data content and controls built into the product preserved consumer privacy, we couldn't ignore the high level of concern."

PC products such as *Marketplace* didn't create the controversy that pits personal privacy against free enterprise. But as on-line and CD ROM demographic data bases proliferate and become accessible to tens of thousands of PC-equipped businesses (see "Know Your Market!" in this issue), consumer anxiety and anger will undoubtedly escalate.

Some observers have called for an updating of privacy legislation, together

(continues)

BUG WATCH

Coming next month

Have you ever spent hours trying to figure out the cause of a software or hardware problem, only to find that someone else has already devised a fix? If so, then we've got something for you. Beginning next month, *Consumer Watch* will feature a list of identified software bugs and hardware incompatibilities, along with information on obtaining fixes or work-arounds. We've asked the major vendors to help us identify problems and provide solutions, and we'd like your input, too. If you uncover a problem with your software or hardware and want to protect fellow users from a similar fate, call us with the details at 415/978-3253.

ANTHONY RUSSO

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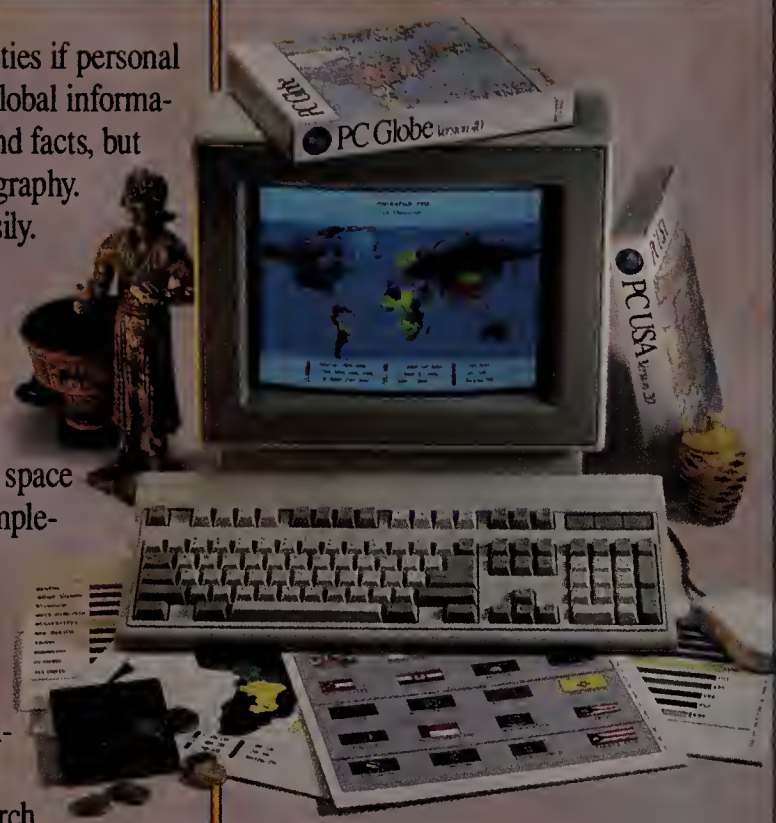
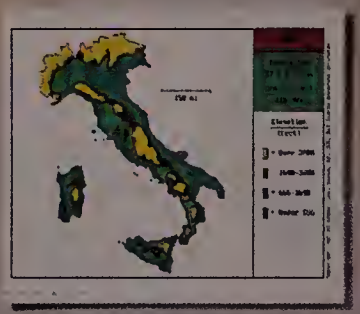
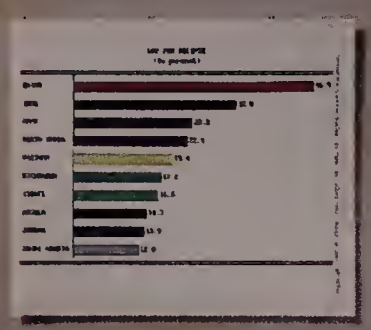


Here, in the efficient space of a few diskettes, is a simple-to-use "electronic atlas" that provides instant profiles, detailed maps and enhanced graphics for 190 countries and dependencies. What would ordinarily take hours to research becomes accessible at the touch of a key.

An almost endless combination of data and comparisons can be displayed via colorful bar charts or on the maps themselves.



Country maps outline elevations, lakes, rivers, mountains and features. World, continent and country maps show city locations. Additional map options allow instant point-to-point distances and bearings as well as display by political alignment such as NATO, OPEC, etc. All data and maps are updated annually. Programs are available in a range of languages.



Economic, GNP, import/export, commodity, political, population, health/cultural data may be cross-compared among all countries or regions. Time zones, dialing codes, visa requirements and language usage are easily accessed. Currency conversions and exchange rates are calculated automatically.

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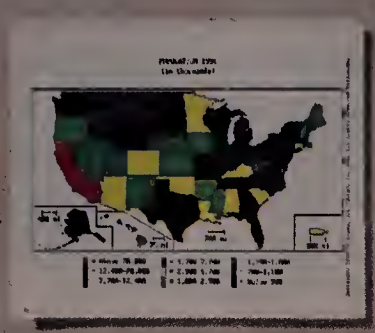

Flags, national anthems and state songs are reproduced in exceptional detail and music. Both programs feature an exclusive "point and shoot" system, simple pull-down menus and compatibility with popular software for creating presentations, graphics and text.

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Circle 210 on reader service card

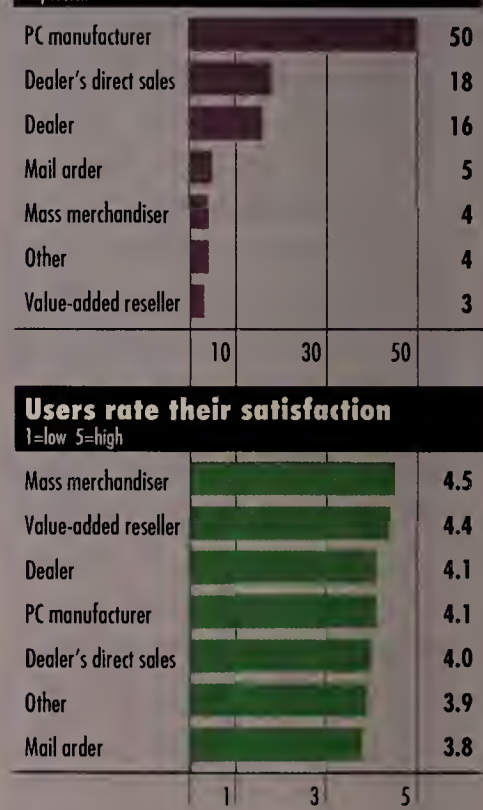
with the creation of a national organization to monitor individual privacy rights. Although credit bureaus have traditionally fought such watchdog committees, Equifax's John Baker says that given the high level of anxiety, "the time might be right for some sort of national policy review board."

Lotus's Manzi adds that as PC hardware and software open up new opportunities, questions inevitably arise regarding the use and misuse of technolo-

(continues)

RATE YOUR SATISFACTION: Hardware Distribution Channels

One-half of all PCs purchased are bought directly from the system manufacturer, according to this survey. But responses indicate that PC buyers are generally satisfied with whatever distribution channel they select. The highest satisfaction rating goes to the growing number of mass merchandisers of PC products, although this group accounts for only 4 percent of the PCs sold.



Source: International Data Corporation. From a survey of 175 large organizations, each with at least 50 PCs.

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DATASTORM

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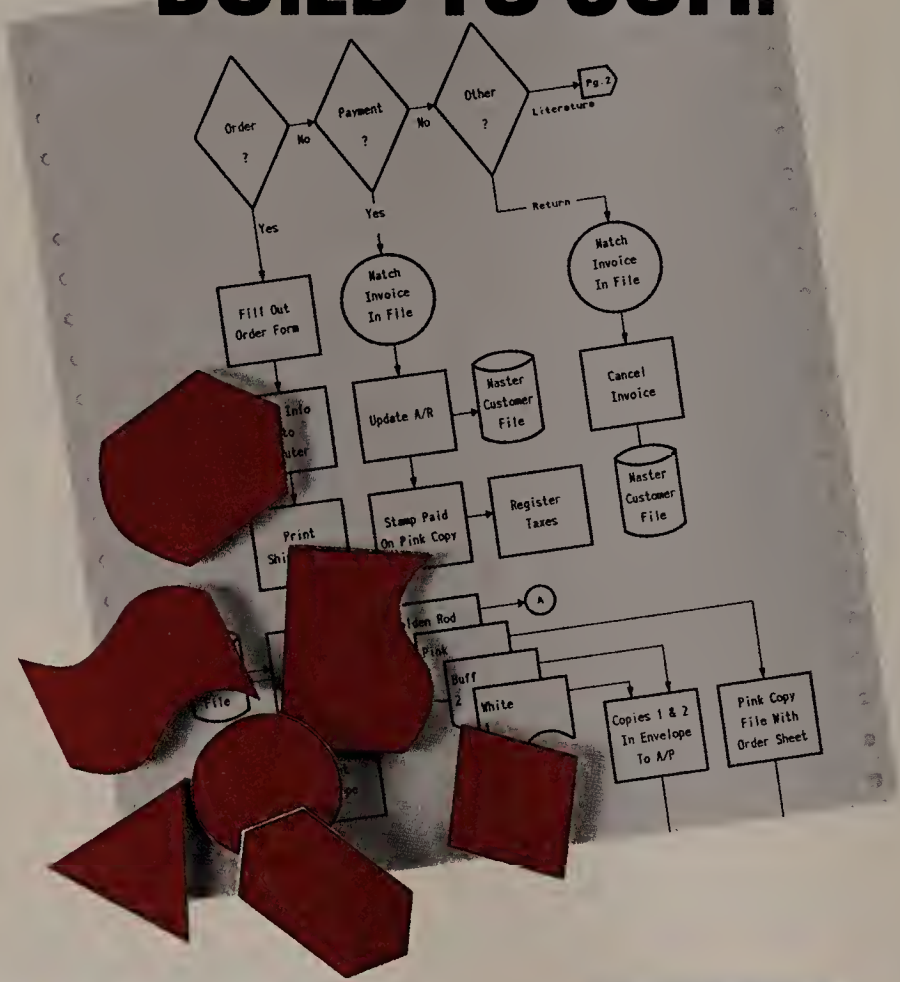
gy. "Balancing the advantages of easier access to information with our individual right to privacy is only the first of many new issues our industry will grapple with over the coming years."

In the meantime, there are some actions consumers can take to minimize the intrusion. The Direct Marketing Association offers a service for anyone who wants his or her name removed from the huge data base of names that are sold to direct marketers, including large mail-order firms, nonprofit organizations, and financial institutions. Requests should be sent to Mail Preference Service, Direct Marketing Assoc., 6 E. 43rd St., P.O. Box 3861, New York, NY 10163.

Lorna Christie, vice president of ethics and consumer affairs for the DMA, also suggests that you inform your credit card companies, mail-order firms with which you regularly do business, and magazines or newsletters to which you subscribe that you do not want your name on subscriber or customer lists that are released to other businesses.

BUILD TO SUIT.



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Circle 233 on reader service card

SHOP TALK

ISC Operators Declare Bankruptcy; Orders Unfilled

Through an ad in your magazine, I ordered an HP LaserJet IIP from ISC in Hermosa Beach, California. I was told I would receive the merchandise in seven to ten days. ISC immediately charged $953.12 to my credit card.

When two weeks went by without my receiving the merchandise, I attempted to contact ISC, but its toll-free number was constantly busy. When I called the other number I was told I needed to speak with Rick Andrews, who could be reached only at the toll-free number. I left several messages, but my calls were never returned. After at least two dozen attempts I finally spoke to Mr. Andrews, who said he would trace the package through UPS and then call me with the results. He never called. I managed to reach him the next day (after 45 minutes on hold), and he told me there had been an "invoice problem," that the printer was "in the Midwest somewhere," and that I would receive it "within 48 hours."

Several days later and still without a printer, I again tried to contact Mr. Andrews. No luck. No one else could help. I even resorted to sending him fax messages, all of which were ignored. When I finally reached him after several more days, Mr. Andrews told me ISC would ship a "second" printer that would arrive "within a week." He requested that if I received two printers to refuse shipment on the second.

When nothing happened, the cycle of busy signals, ignored phone messages,

(continues)

NOW READ WHAT THE REAL EXPERTS SAY ABOUT XTREE.

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PC Magazine

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Circle 319 on reader service card

and faxes began again. More than one week later I spoke with another employee, who promised I would receive a call back from the owner. I didn't. The following day, though, I received a call from ISC and was told my account would be credited immediately for $953.12. Ten days later I called to see if the credit had been issued. Needless to say, it hadn't. That day, a full *seven weeks* after I placed the order, I drove to a local computer store and bought a new printer.

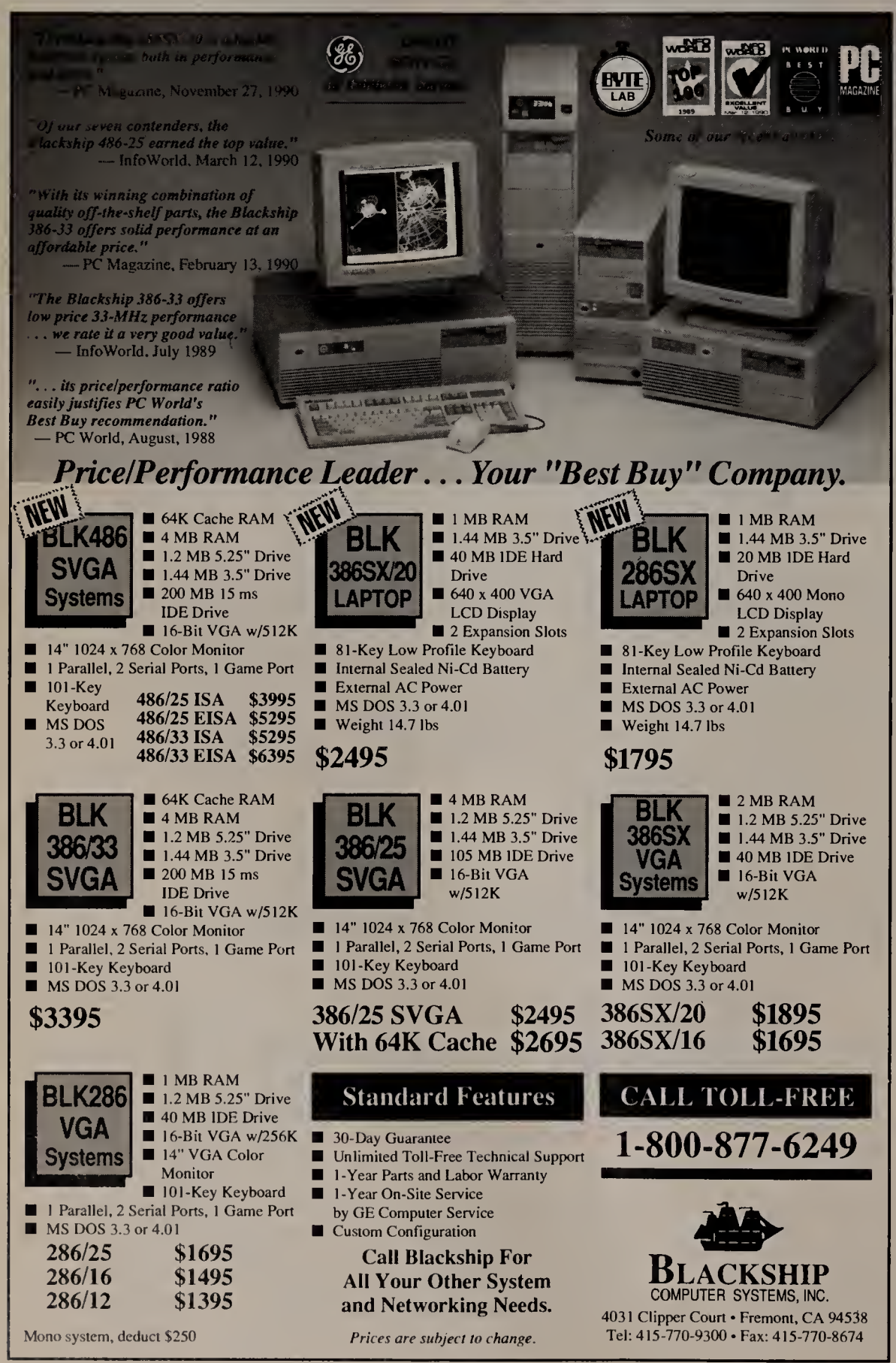
William Rainaldi
Springfield, New Jersey

Editor's note: Mr. Rainaldi's letter was one of nearly two dozen complaints we've received about ISC Power Systems, which advertised in PC World *and other major PC publications during the late fall and winter of 1990. Complainants relate a common story: Products were ordered and paid for but never received. Customers were frequently told that the products were shipped, with ISC offering to initiate a trace on the "lost" goods.*

Consumer Watch *has been unsuccessful in reaching anyone at ISC by phone, but we've forwarded all written complaints to the company. Like many ISC customers, however, we've received no response to our inquiries. We have therefore forwarded the complaints to both the Chief Postal Inspector's Office and the State Attorney General's Office for review for possible action.*

According to Detective Lance Jaakola of the Hermosa Beach Police Department, his office has received over 30 phone calls from disgruntled ISC customers. The case has been turned over to the district attorney's office for review.

Did you have any dealings with ISC Systems? If so, we'd like to hear from you. Customers with unfulfilled orders should also send letters of complaint to the Regional Chief Inspector, Western Region, U.S. Postal Service, San Bruno, CA 94098-0100; or to the Public Inquiry Unit, California Attorney General's Office, P.O. Box 944255, Sacramento, CA 94244-2550.



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Growing Pains?

I have twice attempted to use Packard Bell's 24-hour technical support line. The first time was when I set up the system and the hard drive didn't work. After I'd called the 24-hour line for 10 days and left messages on an answering machine, my call was returned, but I was away from the phone and missed it. I called every day for another week with no response. Finally I paid for a call to the customer service line and reached a technician in 5 minutes. Packard Bell sent a local service agent, and he re-

(continues)

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**Documents do not print in color.

Circle 260 on reader service card

placed the hard drive. It took 28 days from the time I first called to when I got my computer operating again.

I tried to use the 24-hour line again when I purchased SIMM chips to upgrade the memory in my computer. The system will not operate with the new chips installed. It's been 10 days since I started calling Packard Bell's technical support line, and I still haven't received a return call.

Doug George
Seattle, Washington

Editor's note: Mr. George's was one of several letters we received about unresponsive technical support at Packard Bell. In its response to customer and Consumer Watch *inquiries, Packard Bell indicated that delays in returning customer service calls were "due to tremendous growth we've experienced in the past year and the inability to forecast demand." The company has since added 85 employees to its technical support staff.*

Although the additional staff members are a step in the right direction, it's too soon to tell if Packard Bell has turned its problems around. Consumer

(continues)

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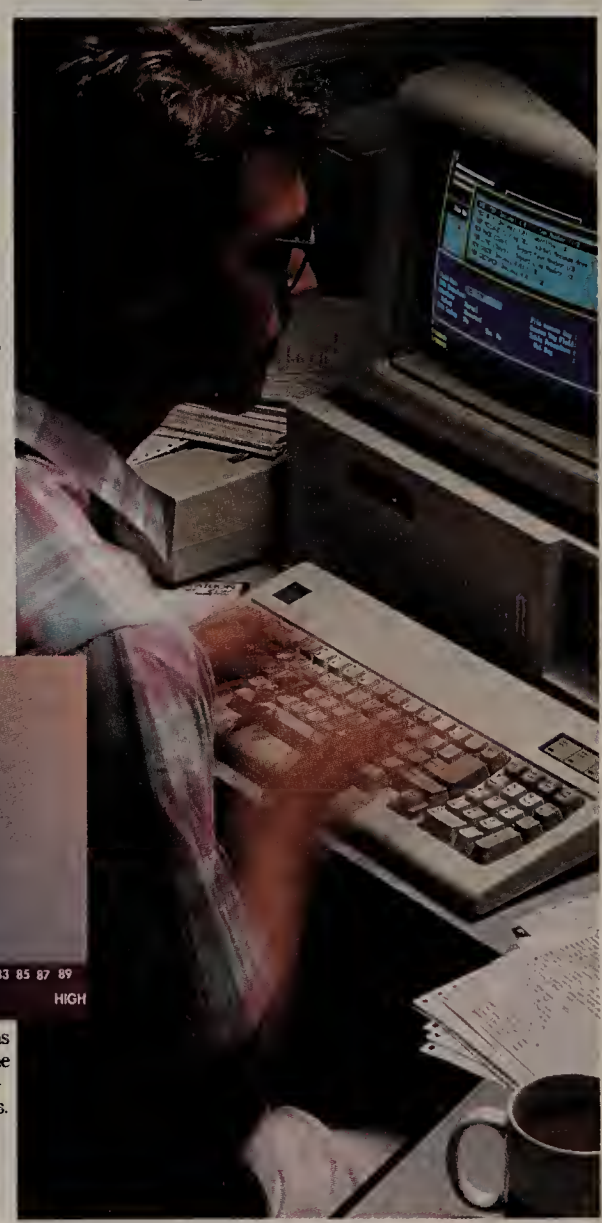

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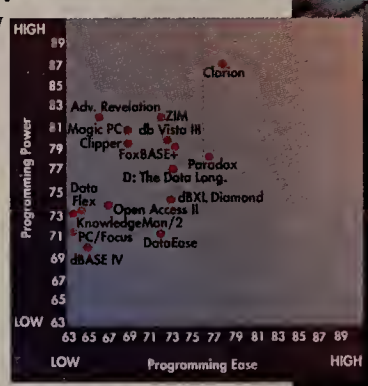

Here's what American corporations in a PC Week survey thought of the power and ease of use of Professional Developer vs. competitors.

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Circle 36 on reader service card

SERVICE EXCELLENCE

These days, when most calls to computer companies result in frustration from having to talk to automated answering systems and then being left on permanent hold, I have found a refreshing exception in WLT Systems, maker of the PC Express line.

Recently we ordered two systems—a 286-based and a 386-based computer—from WLT Systems. All equipment included a three-year parts and labor guarantee.

When the equipment arrived, everything (including all accessories) worked perfectly, but we did have some questions. When I called WLT Systems, I encountered a live human being right from the start. We've made several subsequent calls, and each time we obtained an answer in a matter of minutes. I once had to wait when the proper person was briefly delayed, but he returned my call in less than an hour.

This type of response and service has certainly given us confidence in WLT Systems and its PC Express products.

David Fusco
VP Operations, Music Unlimited
Arlington, Texas

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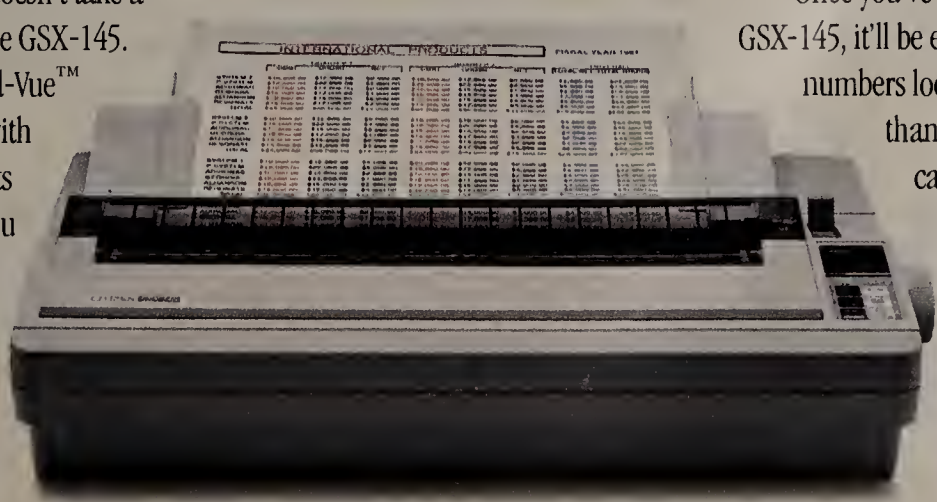
What more could you ask for from a printer? How about peace of mind in the form of a 24-month parts and labor warranty.

Once you've tried the new GSX-145, it'll be easy to see how it makes your numbers look good. This time, in more ways than one. For the dealer near you, just call 1-800-556-1234, extension 34, (in California 1-800-441-2345, extension 34).



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CITIZEN

Circle 91 on reader service card

Watch *will continue to monitor the quality of service provided to Packard Bell customers in the coming months.*

Buying Mail Order for Overseas Military Personnel? Use the Postal Service

Last year I sent an order to Software Publishing Corporation to upgrade my copy of *PFS:First Publisher.* The charge for the upgrade ($51.50) showed up a short time later on my Visa bill. When I had not received the product a few weeks later, I sent a letter to SPC's customer service department asking that they check on the status of the order and requesting a demo disk of the new version of *Professional Write.* I received neither an answer to my letter nor the demo disk. I sent another letter to the president of SPC and have not received a reply to it either.

Patrick J. Freel
Chief Warrant Officer
U.S. Army

Editor's note: According to SPC, Officer Freel was sent his update, but the carrier had difficulty delivering the package to his APO (Army Post Office) address. Upon discovering the problem, SPC reshipped the package via first-class U.S. mail. According to a spokesman for the Joint Military-Postal Authority in San Francisco, any mail-order purchases for overseas military personnel should be sent this route. Packages ordinarily should arrive in four to seven days. During peak holiday periods or times of war, the shipping time is considerably longer. Whenever possible, also list a domestic address and phone number that the mail-order firm can contact should any problems arise with the order.

A Quick Response

In January *Consumer Watch* ran a letter from an Artisoft customer who was having difficulty resolving an ongoing problem with his *LANtastic* network. The item should have indicated that the problem had been resolved.

Says Mike Gaudreau in a follow-up letter, "I am pleased to inform you that Artisoft rectified the problem shortly after receiving your letter. Since the dealer installed the network using his own cable and the Artisoft representative who worked on the problem is no longer there, we will never know the cause of my problem. Artisoft supplied all new cable, new boards, and one year of technical support at no charge. I am very pleased with *LANtastic* thus far and would recommend the product."

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, *501 Second St. #600, San Francisco, CA 94107; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints. Letters with the broadest possible interest will be published.*

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MANAGER'S FILE #1

Taking the Pain Out of PC Use

In December of last year, the San Francisco Board of Supervisors passed landmark VDT regulations requiring employers with 15 or more employees to upgrade or replace workstations and equipment to address the special needs of computer users. Desks, chairs, computer screens and keyboards, even officewide lighting may ultimately need to be replaced as a result of the ordinance.

Although the first of its kind in the nation, the new law indicates a growing awareness on the part of computer users, employers, and government officials of the myriad health problems associated with the rush to automate the office. Eyestrain, headaches, and strain and inflammation of muscles, joints, and tendons in the wrists, hands, neck, back, arms, and legs have all been associated with extended VDT use in improper settings. Horror stories abound about computer users who have been disabled by excruciating pain in the arms, wrists, and hands from carpal tunnel syndrome, and thousands more PC users complain of persistent aches and pains due to extended hours spent tapping at the keyboard.

Given the widespread use of PCs in organizations of all sizes, one point is abundantly clear: This isn't just an employee issue or a management issue. Concerns about health problems resulting from poorly designed PC workstations cut across job descriptions. Workers' compensation and disability claims for computer-related health problems continue to rise, and while data-entry–intensive positions are the most likely candidates for such injuries, writers, editors, artists—anyone whose job involves heavy PC use—can suffer injuries that keep them off work for days, weeks, or months.

Many of the musculoskeletal and vision problems associated with heavy VDT use can, however, be prevented with a little common sense, adjustment of work habits, and the installation of office equipment built for the computing-intensive jobs of the 1990s. A word of caution, however: Before buying any products—whether antiglare screens for PC monitors or new chairs and workstations—read all the literature carefully and then try out the equipment in your office.

Essentials for Safe Computing

KEY ELEMENTS OF A WELL-DESIGNED WORKSTATION

- ✔ Adjustable chair with good mid- and upper-back support
- ✔ Adjustable bilevel terminal table
- ✔ Padded and detachable wrist rest
- ✔ Copy holder
- ✔ Good lighting, including task lighting when needed
- ✔ Antiglare shields (or properly shielded windows to prevent glare on monitors)
- ✔ Thin, detachable keyboard
- ✔ Adequate knee clearance
- ✔ Adequate work space
- ✔ Footrest
- Printer noise shields (if printers are adjacent to work areas)

KEITH BAUMANN

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Circle 77 on reader service card

Edited by ERIC BENDER

OS/2 Relegated to "High End"

Microsoft Sets Stage for Windows Reign

Rift With IBM Over System Software Steadily Deepens

"OS/2 is Dead. Long Live OS/2."

Like actors in a royal drama, Microsoft officials in January formally buried OS/2, the operating system that they had hailed as the imminent heir to DOS until last year. In its stead, they unveiled an ambitious and controversial plan to enhance the *Windows* operating environment with many of OS/2's most significant features and to build an entirely new version of OS/2 with more resemblance to high-performance network operating systems like UNIX than to the current desktop OS/2.

"We want to make *Windows* the best it can be" for the vast majority of business users, says Steve Ballmer, Microsoft's senior vice president for systems software. Acknowledging that OS/2 sales have come nowhere near predictions made when the operating system was first released in 1987, Ballmer also notes that *Windows 3.0* sales have exceeded the company's wildest expectations—2,250,000 copies in the last seven months of 1990, compared with 300,000 copies of OS/2 from 1987 through 1990.

Most of those copies of OS/2 went to support network-oriented programs (such as Microsoft's own *LAN Manager*), and in-house development efforts in Fortune 500 firms. Meanwhile, *Windows 3.0* sales have sparked a boom in off-the-shelf *Windows* application packages like word processors, spreadsheets, and business graphics. *Windows* software sales should easily overtake Macintosh software sales this year.

Microsoft, which made about 50 percent of its $1.5 billion in revenues in applications last year, now will push its ambitious *Windows* plans one step further—despite the prospect of angering IBM, its long-time development partner. "Microsoft has stopped changing its strategy to mollify other companies," says *PC Letter* editor Stewart Alsop.

Windows on Every Desktop

Microsoft officials outline a three-pronged plan of attack in which DOS and *Windows* will assume the role of mainstream desktop operating system. OS/2, meanwhile, will be relegated to high-end uses—for example, network server applications and workstation-level desktop programs.

Sometime around midyear, Microsoft will release *Windows 3.1*, which will feature some performance and cosmetic improvements, including built-in scalable fonts. More important, DOS 5.0 will appear on the scene around the same time, providing memory-management features that will improve the way that *Windows* runs on today's 286 and 386 machines.

In the second half of 1991, Microsoft will start shipping to developers an early 32-bit version of *Windows* that will fully exploit the 386 chip and offer more reliable performance, improved networking capabilities, an easier user interface, and enhanced graphics features found now only in OS/2's Presentation Manager.

When that version of *Windows* becomes available to users, probably in 1992, software developers will face a di-

(see Microsoft, p. 60)

Windows Soars Ahead of OS/2

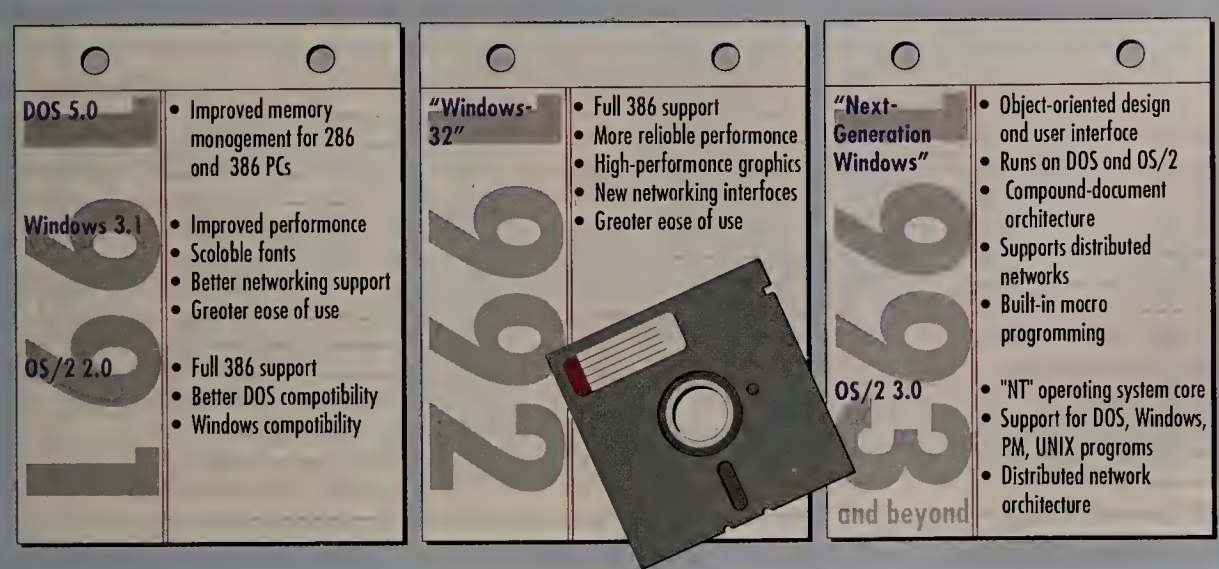
Worldwide system software shipments in thousands

	Windows	OS/2	DOS
1989	840	150	14,100
1990	2000	300	16,100
1991	3000	1100	17,300
1992	5300	3000	17,300

KEITH BAUMANN

While DOS easily remains the dominant PC operating system software, Windows is becoming far more popular than OS/2 among users seeking graphic environments, according to Dataquest estimates.

Microsoft's Windows-First Strategy



KEITH BAUMANN

Although the plan will take several years to unfold, Microsoft has mapped out a comprehensive strategy to radically improve Windows and make it the centerpiece of the next-generation OS/2 3.0. Time frames are approximate; Microsoft has not committed to specific release dates.

Microsoft

(continued from p. 59)

lemma: whether to ignore the environment's new 386-specific features in order to maintain compatibility with 286 PCs, or to take advantage of them in their programs and thus begin to part ways with the past. "A lot of companies would prefer to shift into 386 mode," says Russ Werner, Microsoft's general manager of systems marketing. "We'll have to see what the market profile will be."

Windows on OS/2

IBM will continue developing the current 286 version of OS/2 as well as OS/2 2.0, a full 32-bit version due out this year. But sometime in 1993 or beyond, Microsoft will concentrate on supporting the 386 chip in *Windows* and release OS/2 3.0. This version will include a new operating system core (called NT, for "new technology") that will run on 386 as well as next-generation RISC processors. OS/2 3.0 will process data on more than one chip at a time, feature built-in networking, and offer users easy access to all the information on a network, regardless of where it resides.

Windows remains integral to this vision (which Microsoft chairman Bill Gates calls "information at your fingertips"). A next generation of *Windows* that includes many of the object-oriented concepts found in Hewlett-Packard's *New-Wave*, NeXT's NeXTstep, and Go's PenPoint environments not only will run on a future version of DOS but will serve as the core interface for OS/2 3.0 as well.

Microsoft plans to let Presentation Manager and UNIX programs run on top of OS/2 3.0 as well. But it may also release a stripped-down version of OS/2 3.0, tentatively dubbed "Advanced *Windows*," that will include only the NT operating system core and the *Windows* interface. Some observers see "Advanced *Windows*" as Microsoft's trump card in its contest with IBM for control of operating system standards.

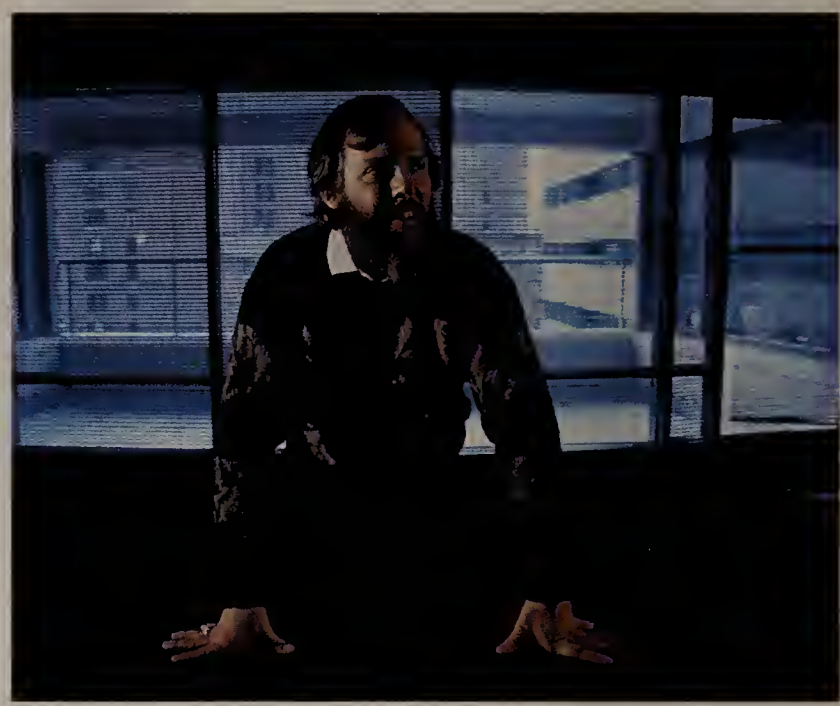
IBM Begs to Differ

Although Microsoft reports that most developers are enthusiastic about its new operating system strategy, the plan also has its dissenters.

First among these is IBM, which points out that the very features Microsoft is trumpeting for *Windows* in 1992 will appear in OS/2 2.0, shipping this year.

Moreover, IBM fundamentally disagrees with an approach that encourages developers to bet all their dollars on the DOS-bound *Windows* interface. "IBM would like to see higher-level programming interfaces that are not so sensitive to the operating system," says Lee Reiswig, assistant general manager for programming at IBM's personal systems group. To that end, Big Blue has invested approximately $100 million in Patriot Partners, a joint venture with Metaphor Computer Systems formed to build a next-generation computing environment that will permit developers to create programs that run on both OS/2 and UNIX.

Nor is IBM pleased with the prospect of a Microsoft-authored local area network strategy, even if it purports to ease networking headaches for both users and developers. "If Microsoft tries to force *LAN Manager* as a standard on the industry, there will be a very negative reaction," challenges Reiswig.



SETH RESNICK

Held down by its DOS roots, Windows soon "will face new technology that will promote far greater ease of use," says Lotus chief scientist David Reed.

Will Windows Run Out of Steam?

Other developers think that *Windows* will start showing its age in comparison to innovative work being done by Go, NeXT, and Patriot Partners.

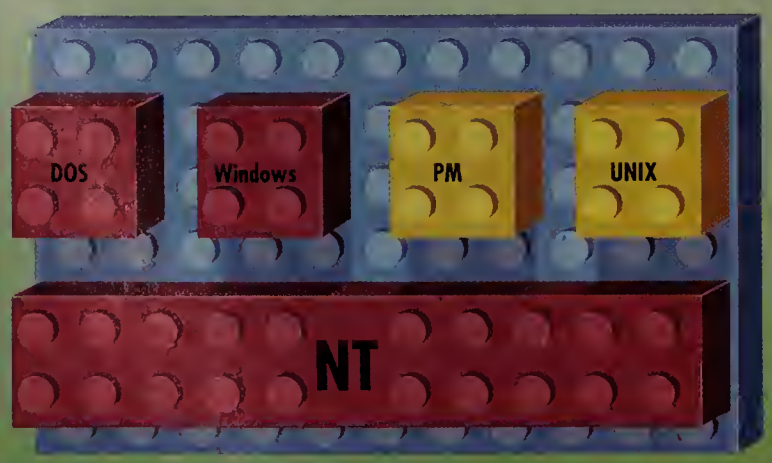
"*Windows* with DOS will be a victim of its own success," says David Reed, Lotus's chief scientist. "It's an old technology that has to face the issue of compatibility with the past. But within a year or so, *Windows* will face new technology that will promote far greater ease of use. It will be hard for *Windows* to change fast enough to support these new ideas. Ultimately, it will lose its lead."

Still, Microsoft is sanguine about a strategy that pulls today's *Windows* applications into tomorrow's computing environments. Says Russ Werner: "*Windows* is truly a phenomenon. If we can move that applications base so that it spans all the way from DOS to high-end systems, then that will be a very powerful story."

—*Richard Landry*

OS/2 3.0—Windows by Another Name

The next generation of OS/2 will be built especially to run DOS and Windows.



OS/2 3.0 will include a new UNIX-like operating system core called NT (for "new technology"), with "snap-in" support for DOS, Windows, Presentation Manager, and UNIX graphical interfaces. Microsoft may also release "Advanced Windows," a stripped-down version of OS/2 3.0 that includes only the NT operating system core, the Windows environment, and DOS support.

KEITH BAUMANN

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From 256KB to 16MB buffer

Input/Output Settings – 4/1 or 3/2:
All parallel ports; user configurable as either three inputs to two outputs, or four inputs to one output, buffered auto-switch

Rapid Data Transfer – 100,000 cps:
The HWP uses Direct Memory Access (DMA) for data transfers into the buffer, making the HWP hardware capable of receiving parallel data at the high rate of 100,000 characters per second.

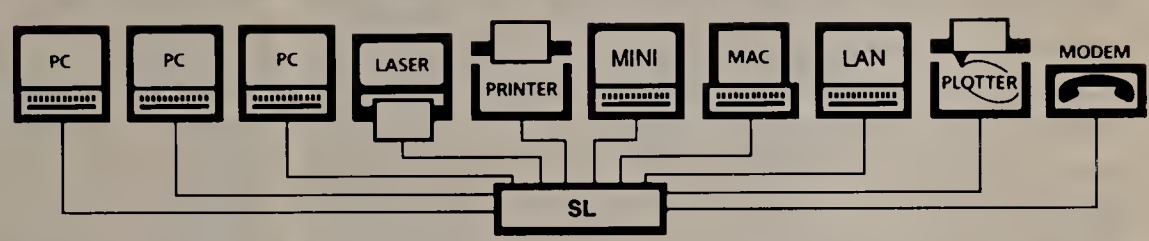
Pop-up Menu or Front Panel Buttons:
Use either the pop-up menu or the front panel switches to select printers, select the next available printer, send multiple copies, clear data, and other functions.

AS-41 — *5 Ports* — *$200*

Smart Switch – No Pop-up or Buffer:
Four parallel inputs to one parallel output, electronic automatic switch with no buffer

SPPS — *(not shown)* — *$100*

Interface Converter – No Buffer
Combination serial-to-parallel, or parallel-to-serial interface converter in a single unit; low-power CMOS design derives power from serial connection, no power supply needed; supports 9,600 to 115,200 bps, DIP switch configurable



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Transfer files serially between PCs up to 115,200 bps; buffer serial data to the SL several times faster than normal 9,600 bps

Pop-up Menu via Hotkeys or Mouse:
Keyboard selection of printers and many other control functions; pop-up is for convenience, but is not required

Simple Installation:
Plug in your cables; if desired, run the installation software for the pop-up menu

Circle 215 on reader service card

Electronic Mail Grows More Flexible

Microsoft, Lotus, WordPerfect Enter Exploding Market

If you think your office can't live without electronic mail, wait until you see what's around the corner.

Meeting scheduling, automatic filing of expense reports, voice mail, group editing, deletion of junk messages, prioritizing of messages, automatic replies to routine inquiries, forms management—you name it, and it's on the way.

Vendors increasingly are crafting modular open-architecture packages that allow E-mail to be integrated closely with other applications and are painstakingly pulling together far-flung nets. Their progress increases the importance of an application that many organizations already describe as lifeblood.

E-mail is as "important to the way we work as the telephone," says Stuart Bard, former vice president for office automation at Balcor, a Chicago real estate firm. When Balcor installed *The Coordinator* from Action Technologies, Bard designed applications with messaging capabilities at their very core, in effect redesigning the way his company did business. "We were able to reduce our corporate staff from 700 to 450 and still maintain the size of our asset base," he says.

American Airlines needs "every imaginable gateway to every imaginable system," says Eric Savoldi.

GARY McCOY

A Microsoft-Sized Market

Offering tremendous savings over electronic mail on larger systems plus greatly improved user interfaces and functionality, PC-based electronic mail should grow rapidly. Eric Arnum, editor of the *Electronic Mail and Micro Systems (EMMS)* newsletter in Forest Hills, New York, expects the number of E-mail servers in use—currently 160,000 nationwide—to triple over the next two years.

To date, only relatively small vendors have seriously pursued this potentially huge market. Novell doesn't sell its own E-mail with NetWare (although it's working hard on E-mail underpinnings). Net leaders 3Com and Banyan lost dominant positions as third parties came up with more feature-laden and flexible products. Among the contenders are *cc:Mail* from cc:Mail in Mountain View, California; *The Coordinator* from Action Technologies in Alameda, California; *Da Vinci eMail* from Da Vinci Systems in Raleigh, North Carolina; *Higgins* from Enable Software's Higgins Group in Alameda, California; *Network Courier* from Consumers Software in Vancouver, British Columbia; and *TOPS* from Sitka in Alameda, California.

However, this fast-growing market now gets serious attention from Microsoft, Lotus, WordPerfect, and other major players.

Microsoft, which has offered *Microsoft Mail* for the Macintosh for several years, should fill the gap in its PC product line soon. The giant firm is "putting together a very impressive desktop strategy" and could well become an E-mail market leader, says David Marshak of Patricia Seybold's Office Computing Group in Boston. It also will help establish crucial software standards.

Lotus Development already offers an E-mail variant, although *Lotus Notes* is marketed instead as a group communications package. Corporations employ *Notes* to build in-house applications that knit together communications with other packages. Eric Sall, director of applications marketing at Lotus, claims a "tremendously successful" first year for *Notes* and says that Lotus is putting many more resources behind it. "This is a very strategic product for us," says Sall.

And *WordPerfect Office*, a desktop organizer/E-mail package, quietly sold more than 375,000 copies in the second half of 1990 (see "The WordPerfect Office," February 1991).

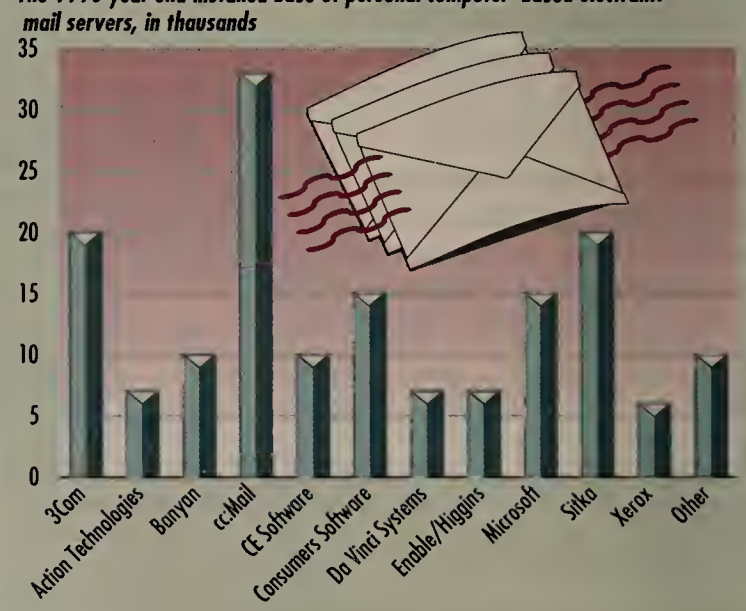
The Corporate Mail Call

In small businesses or corporations where departments are fairly autonomous, support

(see Electronic, p. 64)

No One Owns the PC E-Mail Market

The 1990 year end installed base of personal computer–based electronic mail servers, in thousands



KEITH BAUMANN

About 160,000 personal computer network electronic-mail servers have been installed to date, according to the Electronic Mail and Micro Systems newsletter. No vendor dominates sales, although some observers expect Microsoft's share to soar once it adds a PC product to its current Macintosh-only line. EMMS estimates that the number of user mailboxes has risen to 3 million.

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Electronic

(continued from p. 62)

for E-mail is not a major problem. But many large corporate users hope for a Microsoft, a Lotus, or a WordPerfect to handle their more complex requirements. Eric Savoldi, a systems engineer with American Airlines in Dallas, notes that "we need every imaginable gateway to every imaginable system."

"The majority of E-mail packages are sold by small companies that don't have anywhere near the support staff corporations need to feel comfortable," says Mike Drips, a PC strategic technical analyst for U.S. Sprint in Kansas City, Missouri. "Many companies want national [or] international support, and that is where Microsoft's offering is going to look very attractive."

John Deere & Company in Moline, Illinois, has over 15,000 employees on an E-mail system that occupies an entire IBM 3090 mainframe. A year ago, the firm tested the top PC E-mail packages. It found "*very* significant cost savings," says Tom Waldman, project manager, who is expanding the pilot throughout the rest of the company. The E-mail vendors lacked the expertise to tie together John Deere's diverse lineup of computers, however, so Waldman turned to an outside specialist to implement *cc:Mail*.

Moving to Modular Software

PC-based E-mail systems come in three layers: the front-end application, the mail-transport engine (which gets a message from one user mailbox to another), and the connectivity layer (which contains gateways that link up to other E-mail systems).

When you go shopping for an E-mail package, you typically get all three layers from the same vendor. But sometimes one of the layers doesn't answer your needs. (This is likely to be the connectivity layer, which may lack a gateway you require.)

In theory, future PC users will be able to mix and match all these components to come up with the perfect E-mail package for them. That's easier said than done, however. One problem is the lack of a single standard mail-transport device. Novell and many others back the Message Handling System (MHS) that comes with NetWare, but most E-mail suppliers built proprietary mail transports before MHS became a factor. These suppliers say MHS is not robust enough, although they have added gateways to MHS systems.

Other alternatives come through X.400, an evolving set of specifications for writing mail transports, which is being forged by the CCITT international standards body.

BeyondMail offers a glimpse of E-mail's future: individually customized help for handling your mail.

Small E-mail vendors lack the support that corporations require, says U.S. Sprint's Mike Drips.

DAN WHITE

Most firms believe that X.400 is the long-term answer and that support for MHS eventually will be merged into it.

In the meantime, several E-mail vendors recently published application programming interfaces for their packages. Corporate customers are exploiting these interfaces to incorporate E-mail into their internal office-automation applications. While most non-E-mail application vendors don't want to be bothered with adding E-mail links, that's changing, as shown by Software Publishing's new *Professional Write for Windows* (see "The E-Mail Word Processor" in this issue).

The trend is toward an open, modular E-mail architecture in which E-mail will be seen as just another service to which mainstream applications will subscribe. With that architecture will arrive a flood of "mail-enabled" applications that let you simply touch a button or pull down a menu to communicate with another user on the network, no matter what application you're in.

While groupware packages offer these abilities today, "you will eventually see messaging penetrating the entire desktop," says John Morey, Microsoft's group product manager for work-group applications.

Mail From Beyond

For a glimpse of what a modular E-mail system will look like, nearly everyone points to *BeyondMail* from Beyond of Cambridge, Massachusetts. A front end to existing E-mail packages, *BeyondMail* gives you striking capabilities for handling your mail.

The package helps you manage your E-mail through rules you set up yourself. You can automatically forward mail to other employees, prioritize messages into different files, or even fire off replies (when you're traveling, the package can answer messages marked "urgent" with a note that details your schedule and where you can be reached while you're on the road). And *BeyondMail* does all this on top of existing MHS-based systems. —*Alice LaPlante*

Alice LaPlante is a freelance writer based in Palo Alto, California.

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PC Week, August 27, 1990

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Minimum Hardware Requirements: IBM or compatible computer with 640Kb, hard disk, monochrome or color monitor, mouse optional, MS-DOS 2.1 or later for single users (3.1 or later for networks), 132 column dot matrix printer in compressed mode.

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PC WORLD STREET PRICE LIST

What to pay at retail for PCs, based on IDC's PC Pricing Report survey.

PC WORLD

	National				Metropolitan							
	List	Average	Low	High	Boston	Chicago	Dallas/ Ft. Worth	Los Angeles	Miami/ Ft. Lauderdale	New York	San Francisco/ Bay Area	Washington, D.C.
80286-based desktop PCs												
AST Brava/286	$1695	$1256	$850	$1526	$1405	$1217	$1121	$1119	$1269	$1286	$1384	$1244
Campaq Deskpro 286n	$2399	$1808	$1349	$2159	$1780	$1776	$1780	$1760	$1822	$1872	$1791	$1766
Dell 210	$1500	$1500	n/a	n/a	$1500	$1500	$1500	$1500	$1500	$1500	$1500	$1500
IBM PS/2 50Z-031	$2745	$2011	$1595	$2900	$2164	$1963	$1963	$1865	$2224	$2042	$1836	$2014
Tandy 2500 XL	$2098	$2098	n/a	n/a	$2098	$2098	$2098	$2098	$2098	$2098	$2098	$2098
80386SX-based desktop PCs												
AST Brava/386SX	$2845	$2102	$1450	$2799	$2245	$2229	$2311	$1737	$2367	$2059	$2175	$2026
Campaq Deskpro 386s	$3199	$2370	$1855	$2879	$2332	$2523	$2524	$2248	$2548	$2445	$2289	$2304
Dell System 316 SX	$1700	$1700	n/a	n/a	$1700	$1700	$1700	$1700	$1700	$1700	$1700	$1700
Epsan Equity 386SX Plus	$2999	$1912	$1450	$2350	$1864	$2032	$1811	$1625	$2137	$1848	$1874	$1996
IBM PS/2 55-061	$3895	$2731	$1948	$3110	$2804	$2647	$2889	$2783	$2653	$2595	$2807	$2675
NEC PawerMate SX+x	$2999	$1841	$1299	$2500	$1906	n/a	$1677	$1672	$1929	$1732	$1886	$1746
80386DX-based desktop PCs												
AST Premium 386/25	$5595	$3815	$2740	$5036	$4665	$3625	$3745	$3342	$4350	$4420	$4153	$3879
Compaq Deskpra 386/33L	$9999	$6863	$4825	$8000	$7398	$6966	$7796	$7230	$7508	$6540	$6137	$8214
Epson Equity 386/25	$5199	$3426	$2600	$3999	$3437	$3458	$3299	$2860	$3954	$3869	$3425	$3607
IBM PS/2 70-061	$4745	$3322	$2476	$3999	$3358	$3365	$3258	$3236	$3341	$3234	$3282	$3438
IBM PS/2 70-A61	$6245	$4456	$2995	$5270	$4664	$4627	$4385	$4573	$4182	$4203	$4368	$4454
Tandan 386/33	$3879	$3879	n/a	n/a	$3879	$3879	$3879	$3879	$3879	$3879	$3879	$3879
Tandy 4033 LX	$5898	$5898	n/a	n/a	$5898	$5898	$5898	$5898	$5898	$5898	$5898	$5898
80486-based desktop PCs												
AST Premium 486/25E	$8595	$6198	$4500	$7736	$7432	$5760	$5560	$5461	$6159	$6693	$7341	$6195
Campaq Deskpra 486/33L	$13,999	$10,479	$8119	$12,599	$7398	$10,622	$10,375	$9856	$10,826	$10,799	$10,325	$10,491
Dell 425E	$6000	$6000	n/a	n/a	$6000	$6000	$6000	$6000	$6000	$6000	$6000	$6000
IBM PS/2 95 XP	$17,745	$13,299	$10,292	$17,745	$14,492	$12,973	$13,150	$14,122	$13,889	$12,994	$11,796	$13,010
NEC PawerMate 486/25E	$12,499	$8178	$6489	$10,570	$7490	$11,233	$8200	$6618	$10,341	$9225	$7341	$8016
Portables/laptops												
Campaq LTE	$2699	$1930	$1295	$2429	$1888	$2099	$1963	$1934	$2049	$1873	$1900	$1846
Compaq LTE/286	$3499	$2535	$2000	$3149	$2535	$2605	$1963	$2466	$2591	$2553	$2466	$2482
Dell 320LT	$3899	$3899	n/a	n/a	$3899	$3899	$3899	$3899	$3899	$3899	$3899	$3899
Epsan Equity LT-386SX	$5598	$3788	$3175	$4990	$3603	$4267	$3727	$3383	$4176	$3970	$3383	$3735
IBM P70 386	$7695	$5601	$4463	$6639	$5580	$5,758	$5333	$5401	$5623	$5603	$5581	$5900
Tashiba T1000SE	$1499	$1057	$837	$1349	$1192	$1190	$1260	$1032	$1229	$1015	$1032	$995
Tashiba T3100e	$4299	$2997	$2295	$3869	$2951	$3373	$3499	$2872	$3364	$2733	$2872	$3076

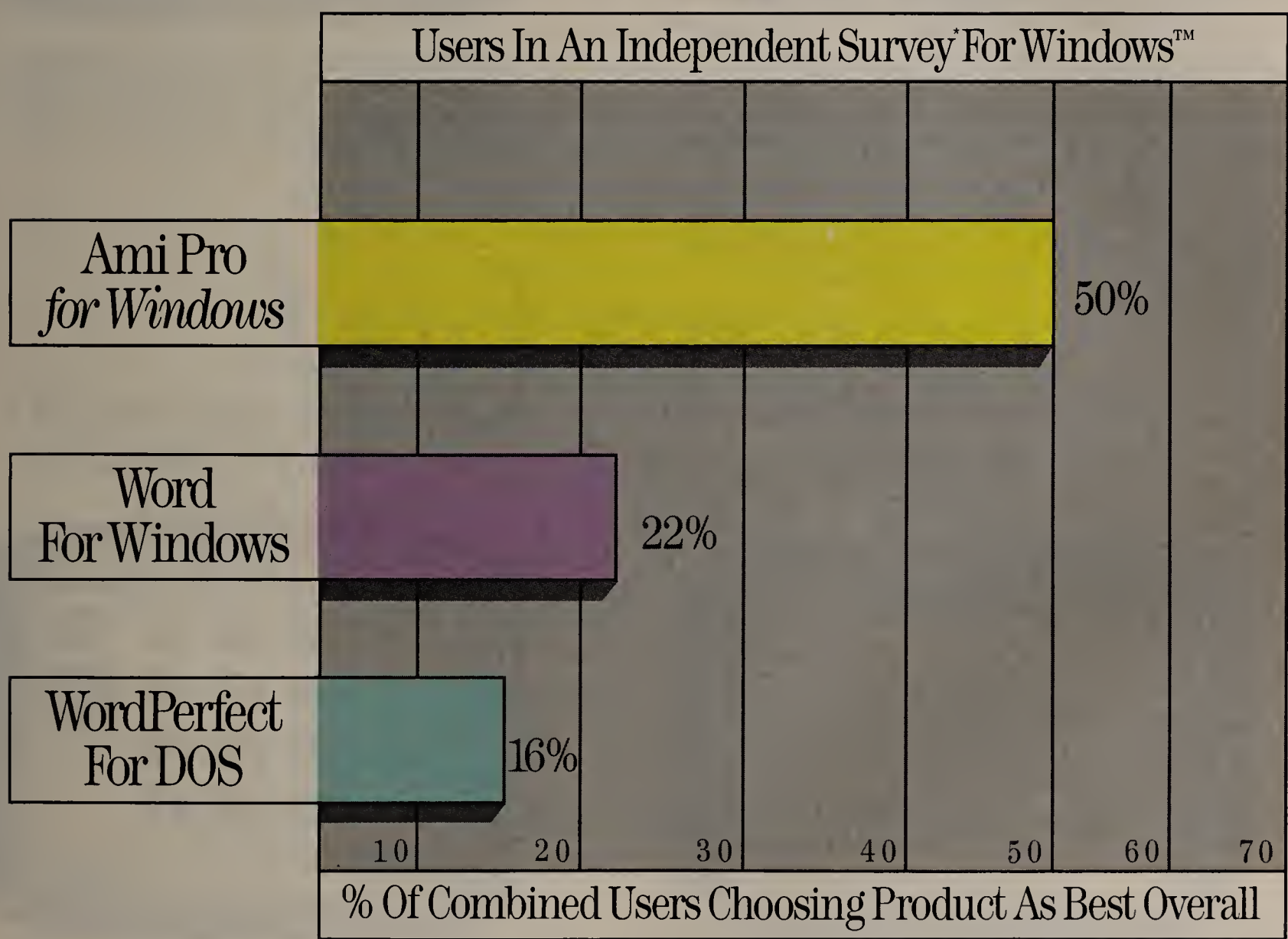
Fram an IDC survey af mare than 180 camputer dealers in eight cities. Figures are based an at least faur price quates far each machine; prices are based an manufacturer's standard canfiguratian including keybaard but na manitar.

L.A. and Dallas Come Out Ahead for Desktop Bargains

Retail pricing for SX-based desktops in eight metropolitan areas

Comparing average street prices for SX-based desktops in eight metropolitan regions, International Data Corporation's December survey found substantial differences.

There's only one word processor for Windows that's winning it all.



*Independently conducted Windows word processing Usage & Attitude Study, November, 1990. Figures cited are among Word for Windows users that are also users or triers of Ami Pro.

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Preferred nearly 2:1 for quality of output.

Try Ami Pro™ for Windows™ just once, and you'll see why users prefer it by such wide margins over other word processors. With more than 360 powerful features, and its incredibly flexible formatting tools, it's not surprising that Ami Pro has unmatched quality in printed output.

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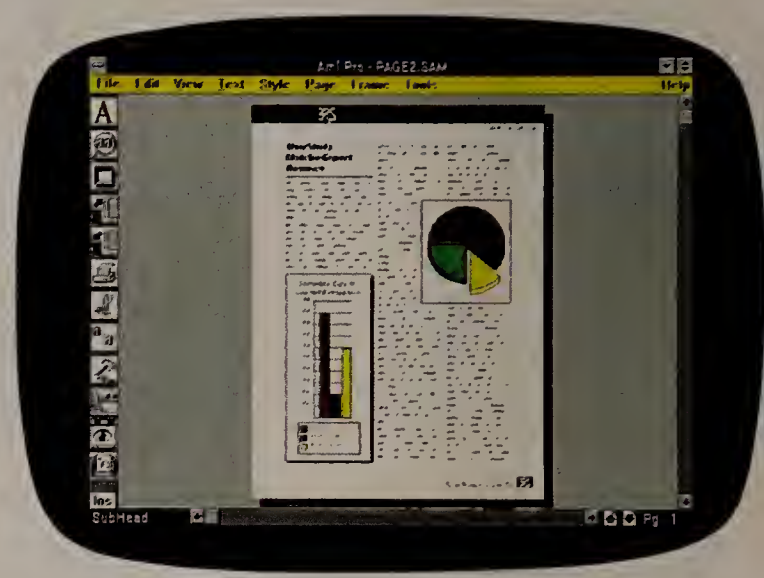

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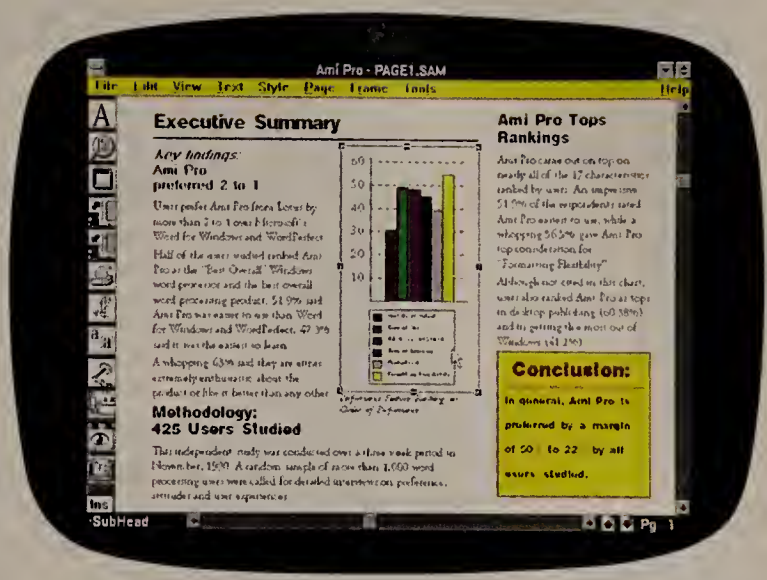

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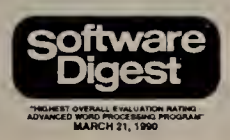

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*Offer expires April 30, 1991 **The working model comes with its own Windows demo version and lacks some features including thesaurus, spell checker and ability to save files.

Circle 324 on reader service card

TWO-FISTED MANAGEMENT

dFacts Are In.

DATABASE COMPARISON TABLE	dBASE IV version 1.1	Paradox version 3.5	FoxPro version 1.02
EASE OF USE			
Control Center organizes data, queries, forms, reports, labels, applications on one screen	Yes	No	No
Create applications *without programming*	Yes	Yes	No
Modern pulldown menus for all Design Tools	Yes	No	Limited
Query by Example (QBE) for easy access to information	Yes	Yes	No
Context specific help by menu item	Yes	No	No
PRODUCTIVITY			
Quick Layout for automatic forms, reports and labels	Yes	No	Yes
Application Generator for quick application development	Yes	Yes	No
Automatic code generation for all Design Tools	Yes	No	No
Automatic maintenance of multiple indexes for ordering data	Yes	No	No
Memo fields for notes, letters, descriptions	Yes	No	Yes
POWER & FLEXIBILITY			
Bold, underline, italic, subscript, superscript text for high impact reports and labels	Yes	No	No
User Defined Functions for extending programming language	Yes	No	Yes
Data input validity checking in forms	Yes	Yes	Yes
Multi-user transaction processing ensures data integrity	Yes	No	No
Number of file formats imported/exported	7	6	3
INDUSTRY STANDARDS			
#1 Selling, #1 Rated multiuser database; over 3 million users (1)(2)	Yes	No	No
Compatible with dBASE III PLUS data and applications	Yes	No	Yes
Compatible versions for DOS, VAX VMS, Macintosh, SunOS and other UNIX platforms (3)	Yes	No	Limited
Structured Query Language (SQL) integrated with programming language	Yes	No	No

(1) dBASE III PLUS and dBASE IV comprise approximately 55% of PC database systems sold (3 times nearest competitor) according to the most recent report by the market research firm Audits & Surveys (Oct. 1990) (2) Software Digest rated dBASE IV #1 among multiuser databases, October 1990 (3) Versions of dBASE IV are shipping for DOS, VAX, and SunOS. Macintosh and other UNIX Platforms are announced.

Based on what our customers tell us, we made a list of some of the most important features to look for in data management software.

Then we compared the new dBASE IV® version 1.1 with two other database products.

As you can see, dBASE IV offers exclusive advantages in many categories.

For instance, only dBASE IV lets you access all its functions from a single screen. Called the Control Center, this screen lets you manage existing data, and create new tables, queries, reports, forms and labels totally without programming.

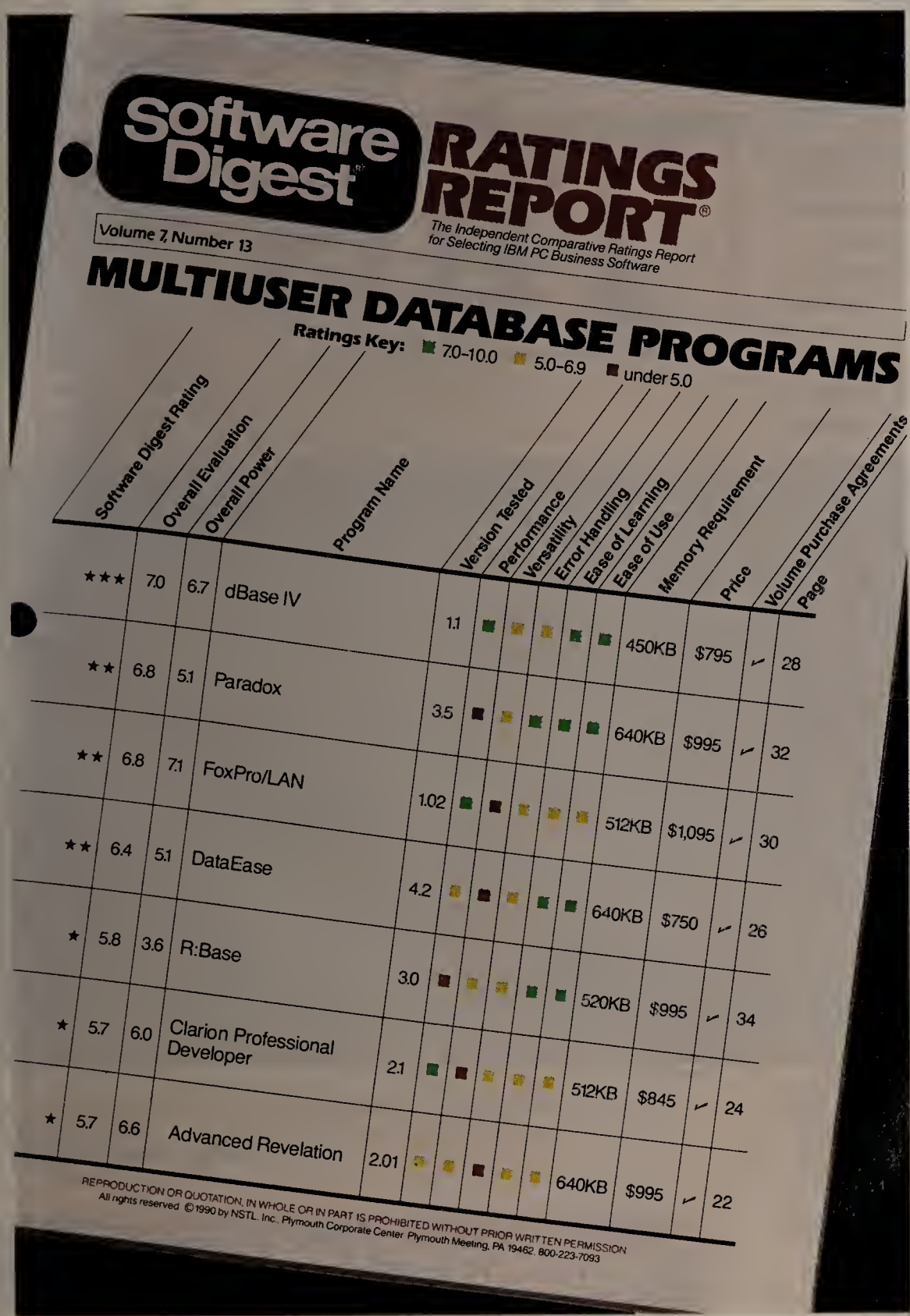
When all the facts are on the table, it's easy to see which database software is best.

Of course we aren't the only ones who have come to this particular conclusion.

Software Digest rates dBASE IV version 1.1 the #1 Multiuser Database (Vol. 7, No. 13, Oct. '90).

Trademark/owner: dBASE IV, Ashton-Tate, Ashton-Tate logo/Ashton-Tate Corp. Other company or product names mentioned may be

dTruth Comes Out.



Software Digest RATINGS REPORT®

The Independent Comparative Ratings Report for Selecting IBM PC Business Software

Volume 7, Number 13

MULTIUSER DATABASE PROGRAMS

Ratings Key: 7.0–10.0 5.0–6.9 under 5.0

Software Digest Rating	Overall Evaluation	Overall Power	Program Name	Version Tested	Performance	Versatility	Error Handling	Ease of Learning	Ease of Use	Memory Requirement	Price	Volume Purchase Agreements	Page
★★★	7.0	6.7	dBase IV	1.1						450KB	$795	✓	28
★★	6.8	5.1	Paradox	3.5						640KB	$995	✓	32
★★	6.8	7.1	FoxPro/LAN	1.02						512KB	$1,095	✓	30
★★	6.4	5.1	DataEase	4.2						640KB	$750	✓	26
★	5.8	3.6	R:Base	3.0						520KB	$995	✓	34
★	5.7	6.0	Clarion Professional Developer	2.1						512KB	$845	✓	24
★	5.7	6.6	Advanced Revelation	2.01						640KB	$995	✓	22

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Perhaps the most independent publication in the industry, *Software Digest* accepts no advertising whatsoever. Corporations pay hundreds of dollars a year to receive their monthly reviews—which are considered highly unbiased and objective. Their exhaustive, 75-page report concludes:

"Among the top ranking programs, dBASE IV (version 1.1) is the most well-rounded, with solid performance, versatility, and usability." Commenting on speed, *Software Digest* points out that "dBASE IV produces all three test reports as fast as or faster than FoxPro/LAN." As for Ease of Use and Ease of Learning, dBASE IV scored in the Excellent Range as many times as any other multiuser database product tested.

For a free evaluation kit, including competitive details and a free demo disk, call toll-free: 1-800-437-4329 ext. 1407. Better yet, call 1-800-2ASHTON to upgrade to the new dBASE IV now.

The truth is, no other database can do so much to improve productivity.

Ashton-Tate®

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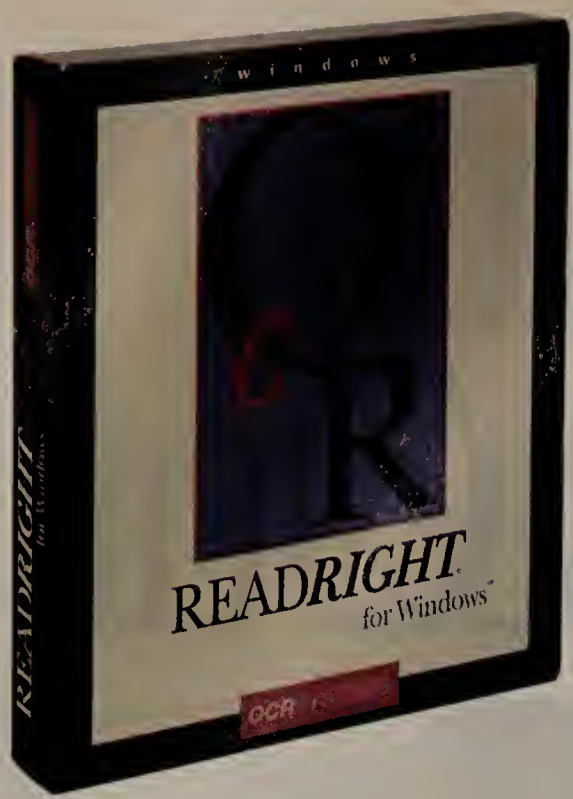
Circle 15 on reader service card

Introducing ReadRight for Windows



Can't Touch This.

Good OCR shouldn't cost you a fortune. That's why OCR Systems has offered high-quality, affordable OCR products for more than 20 years. Products like ReadRight 2.01, which for the last two years has won the *Publish* Reader's Choice Award for PC OCR software. And which the *Seybold Report on Desktop Publishing* said "impressed us in virtually all areas."

So when we introduce new software like ReadRight for Windows – a product we've been developing for more than two years – you can be sure it's worth your attention. ReadRight for Windows is an omnifont OCR product that offers you the highest level of accuracy (99.9%) at a price no one else can touch. And with all the features you're looking for.

Like a built-in dictionary that enhances ReadRight's already impressive accuracy. You can even add your own words to a user dictionary. And with the pop-up error checker, you can compare recognized text against the scanned image without ever looking back at the original document.

ReadRight reads practically any page– typewritten, typeset, laser-printed, NLQ dot matrix, and fax images. Even text that's bold, underlined, or italics. And it outputs the text directly into the format of your other software applications.

And that's not all. ReadRight automatically separates text from graphics, even on pages with complex layouts, for faster text recognition. Or if you don't want the whole page, you can clip the paragraphs that you want ReadRight to recognize. You can design templates to quickly process pages with similar layouts. And ReadRight handles stacks of pages, single- or double-sided. You can even defer processing so your computer isn't tied up when you need it.

So why spend a fortune for OCR when you can buy ReadRight for Windows at an untouchable price?

Features	ReadRight for Windows	WordScan Plus	OmniPage Professional	WordScan	OmniPage 3.0
Accuracy	99.9%	99.9%	99.9%	99.9%	99.9%
Omnifont	✔	✔	✔	✔	✔
Windows 3.0	✔	✔	✔	✔	✔
'286 Compatible	✔	✔	No	✔	No
Point Size	6-72	6-28	6-72	6-28	6-72
Built-in Dictionary	✔	✔	✔	✔	No
Error Verifier	✔	✔	✔	No	No
Deferred Processing	✔	✔	✔	✔	No
Multizone Clipping	✔	✔	✔	No	✔
Price	**$495**	**$995**	**$995**	**$595**	**$695**

Call for the name of the ReadRight dealer nearest you or for a free working demonstration disk. **(800) 233-4627**

ReadRight® for Windows™

The #1 OCR software.

OCR Systems, Inc., 1800 Byberry Road, Suite 1405, Huntingdon Valley, PA 19006 ▪ (215) 938-7460 ▪ Fax (215) 938-7465

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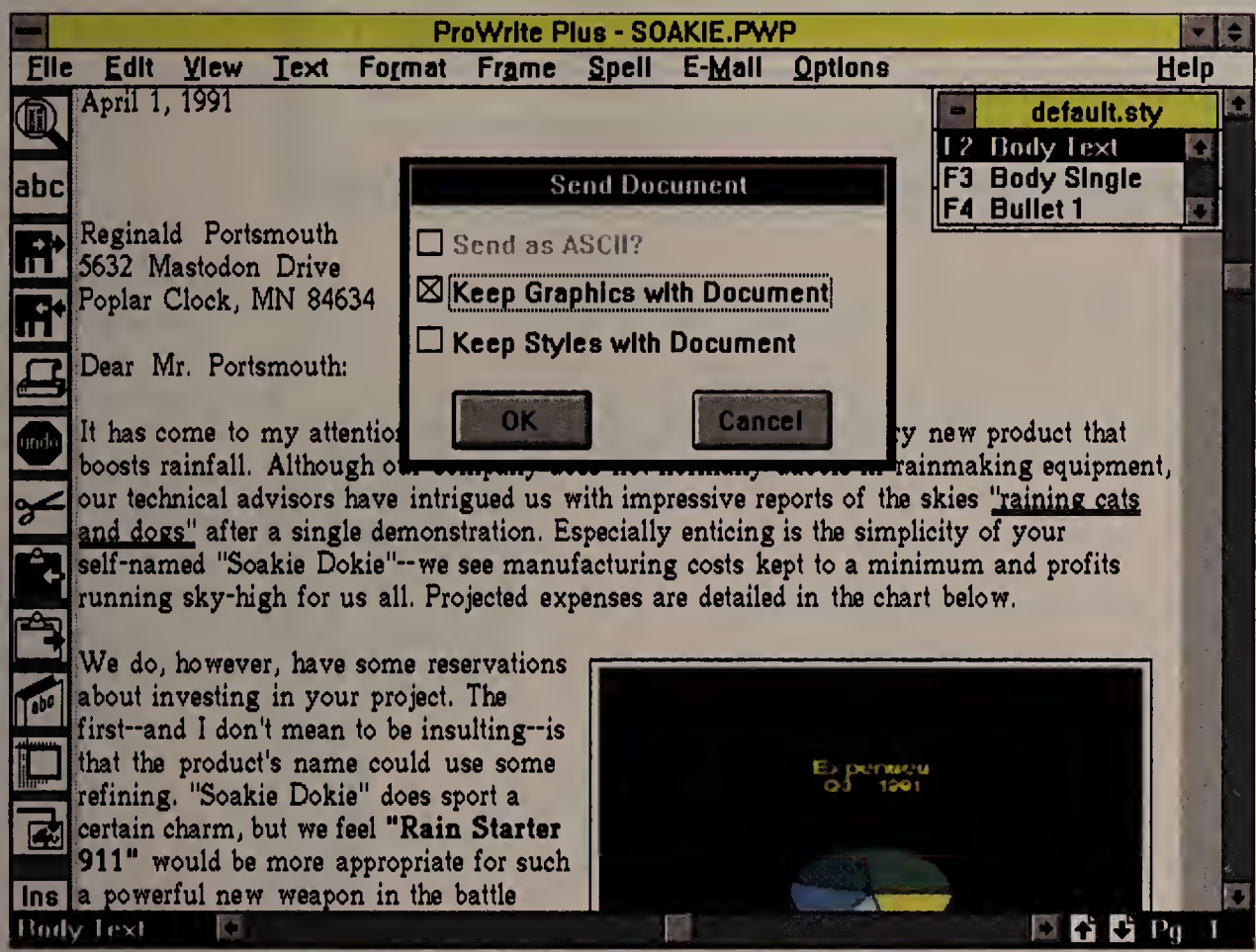
Circle 199 on reader service card

The E-Mail Word Processor

Software Publishing's Professional Write Plus for Windows brings full-blown electronic mail to Windows word processing.



Based on Ami Professional, Professional Write Plus for Windows sports the familiar customizable icon bar and floating style-sheet window. The key new feature is a tightly integrated E-mail module. Here, you can send off the current document without leaving the main editing screen, choosing from various levels of formatting.

Eric Brown

Like most editors, I'm a wordy guy. Put a whole staff of editors on an E-mail system, and the megabytes of verbiage quickly pile up. E-mail has become not only our messaging medium but our routing medium as well.

That's a problem. The simple text editors built into most E-mail packages are fine for short memos, but you usually spend a lot of time switching between E-mail and a separate word processor. Once you're in the word processor, it's easy to forget the exact details of the message you're answering. If you do save the message to disk along with many others, you may have trouble recalling its name. Saving a file for E-mail transmission can also be a hassle—unless the recipient has the same word processor, you must save the file in ASCII, and duplicate files can waste disk space and lead to confusion. Finally, even if your E-mail package lets you "shell out" to another application and back, you'll drum your fingers while switching.

Add up these annoyances, and you'll see why Software Publishing's *Professional Write Plus for Windows* makes so much sense. It's a fairly powerful word processor with E-mail built in—and because it's compatible with Novell's popular MHS E-mail standard, there's a good chance you can swap mail with your existing E-mail system.

A New Breed of Professional

Despite its name, *Professional Write Plus* inherits almost nothing from SPC's *Professional Write*. It's based instead on *Ami Professional*—SPC licensed the code from Samna (before Lotus bought Samna), halved the price, and stripped some features to fit the executive word processor mold. *Professional Write Plus* lacks *Ami Professional*'s macros, kerning, table editor, table of contents, and indexing, and there's no outlining, redlining, drawing, or charting.

Still, the program is markedly more powerful than either *Professional Write* or the

SNAPSHOT

Professional Write Plus for Windows 1.0

A modified version of *Ami Professional*, Software Publishing's entry into *Windows* word processing boosts a full-fledged E-mail module.

KEY FEATURES

- **MHS-compatible E-mail**
- **Grammar and spelling checker, thesaurus**
- **Frame-oriented graphics manipulation**
- **Customizable icon bar**

AVAILABILITY

March

PRICING

$249; upgrade from Professional Write or Office Writer $50

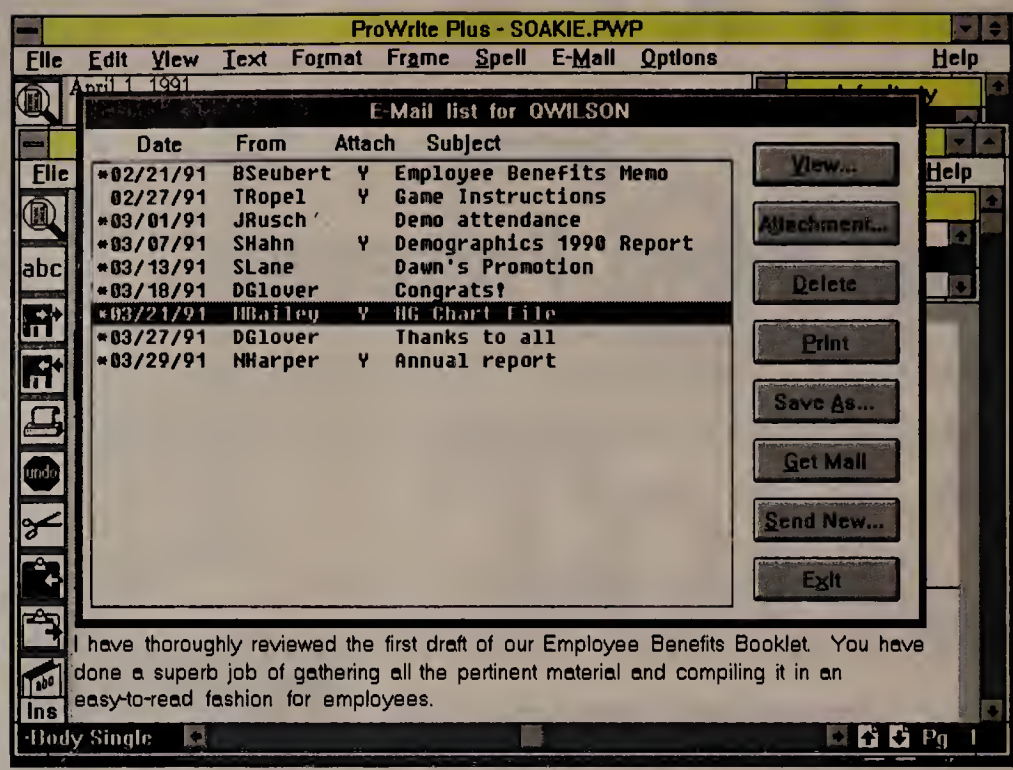
Software Publishing Corp.
1901 Landings Dr.
Mountain View, CA
94043
415/962-8910

Reader service no. 709

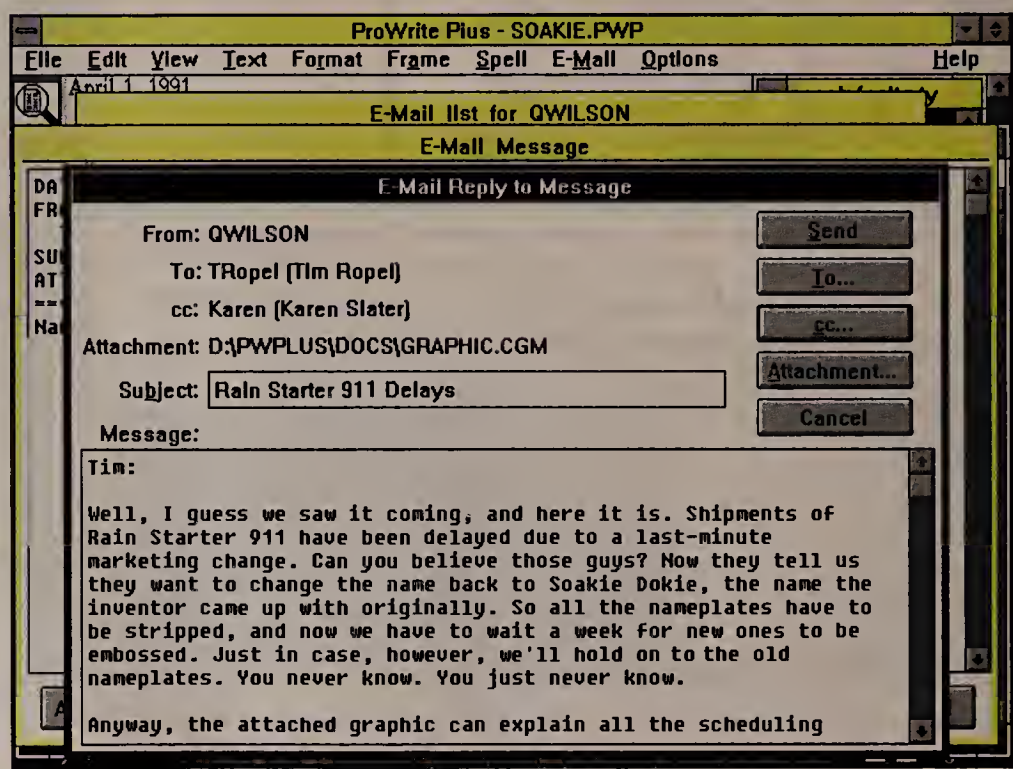
low-end *Ami*, and most executives won't mind the omissions when they consider the other top features borrowed from *Ami Professional*. These include style sheets, thesaurus, speller, footnotes, and full Dynamic Data Exchange (DDE) support for automating data transfer between *Windows* applications. *Professional Write Plus* shares *Ami Pro*'s superb formatting and graphics handling talents—like a desktop publishing package, the program lets you draw frames, import graphics, and then easily manipulate and rescale images.

SPC even adds a few tricks of its own. You can invert graphic images and draw on an extensive list of file conversion routines. Also new: an integrated version of the popular *Grammatik* grammar checker.

The only major interface change from *Ami Pro* is that pulldown menus have been reorganized slightly. As with *Ami Pro*, you'll enjoy well-designed dialog boxes complete with graphical examples that reflect formatting changes on the spot. You also get a customizable icon bar, but the icons lack *Ami Pro 1.2*'s slick 3-D look and feel. Unfortunately, the program shares *Ami Pro*'s major flaw—you can't open more than one window without loading another copy of the program. Overall, however, *Professional Write Plus* is smooth sailing and easier to use than *Word for Windows*.



Professional Write Plus's MHS-based E-mail module includes all the major messaging features. You can even set the program to launch external applications with attachments.



When sending a message with Professional Write Plus, you can use the word processor's main editor or write short replies with this convenient minieditor.

E-Mail a Mouse Click Away

Professional Write Plus isn't the first word processor with built-in E-mail—*MultiMate* was—but it's the first full-featured E-mail front end. You get standard features like distribution lists, reply, copy, printing, and attachments. You can even teach the program to launch applications with attachments, so, for example, every time it sees an XLS file, it automatically loads the file in *Excel*. The only key omission is message folders, and you'll miss out on extras like blind copies and return receipt.

MHS compatibility means you can exchange mail with any other MHS package, including *Da Vinci eMail*, *WordPerfect Office*, and special MHS versions of *The Network Courier* and *cc:Mail*. You'll miss out on a few of your department E-mail system's bells and whistles, however, such as bulletin boards.

But forget features. The real treat of *Professional Write Plus*'s E-mail module is its tight integration with the word processor. To send the current document, you just select a pulldown menu option, choose a mailing list, and answer prompts asking whether to keep style and graphics or send the file as ASCII text. If you want, you can quickly pop received documents into the main editing screen.

Now that *cc:Mail*, *The Network Courier*, and other major E-mail packages sell in *Windows* versions, you may wonder whether you need built-in E-mail. After all, with *Windows*—and a 386 and enough RAM—you can load both your E-mail and word processing packages at once and cut and paste between them. But if you're a little short on PC horsepower, or if you want to add E-mail to Novell sites without any big installation hassles, or if you just crave that extra level of integration, *Professional Write Plus* looks like a good executive decision.

Eric Brown is a senior editor for PC World.

WARNING COMPAQ OWNERS: Exposure To The Following Pages May Cause High Blood Pressure, Loss Of Sleep, And Severe Depression.

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TOUGH ACT TO FOLLOW.

Getting more computer for less money is always a good idea. But with today's tight budgets, it's absolute genius.

Just check out the new Dell® 325P. It has a full 25 MHz 386™ DX CPU for better performance than the SX in the Compaq. There's an optional 32K RAM cache that can boost performance an additional 20%. And it's backed by a service package that's won an unprecedented 8 *PC Week* Corporate Satisfaction Polls.

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The Dell 325P 386 25 MHz§ *Lease: $108/mo.***

Finally, a poll with reliable information.

Remember those 8 Corporate Satisfaction Polls? Well one poll category we dominated is the one called "reliability"—maybe because Dell computers are designed, built and tested under the same roof. And nothing leaves the building until we're sure everything works like it's supposed to, when it's supposed to.

Then you get up to 30 days to use it.

If you aren't completely satisfied, send it back.

THE NEW DELL SYSTEM® 325P 25 MHz 386.

Standard Features:

- Intel® 80386 microprocessor running at 25 MHz.
- Page mode interleaved memory architecture.
- Standard 1 MB of RAM;* optional 2 MB or 4 MB of RAM expandable to 16 MB on the system board.
- Integrated VGA controller with 1024 x 768 support.
- Integrated hard drive and diskette drive interface.
- Optional 32 KB SRAM cache.
- Socket for Intel 80387 math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
- 3 full-sized 16-bit AT expansion slots available.
- High-performance IDE 40 MB, 80 MB, 100 MB, 190 MB, and 320 MB hard disk drives.
- 1 parallel port, 2 serial ports, PS/2 compatible mouse port, all integrated.
- 85 watt power supply.
- 12-month On-Site Service Contract.
- Optional i486 microprocessor upgrade card running at 33 MHz.

40 MB VGA Color Plus System $2,499

Price listed includes 1 MB of RAM.* 80, 100, 190 and 320 MB hard drive configurations also available.

§The Dell system includes VGA Color Plus Monitor, 80 MB hard drive, 2 MB RAM. The Compaq system includes VGA Color Monitor, 60 MB hard drive, 2 MB RAM. *Performance Enhancements: Within the first megabyte of memory 96 KB of memory is reserved for use by the system to enhance performance. Can be optionally disabled. All systems are photographed with optional extras. All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. †Source: From the Compaq Computer Corporation price list effective October 15, 1990. **Payment based on 36-month, open-end lease. ◊Leasing arranged by Leasing Group, Inc. In Canada configurations and prices may vary. Dell and Dell System are registered trademarks of Dell Computer

TOUGH ACT TO SWALLOW.

Compaq DeskPro 386s/20 386SX 20 MHz§ *Actual dealer prices may vary.*

We'll return your money, no questions asked.

If something goes wrong, it won't wreck your day.

But just for the sake of argument, let's suppose something does go wrong with your Dell computer.

Just call the Dell toll-free technical hotline, we can solve 90% of all problems, often in 6 minutes or less.

If it can't be solved over the phone, a trained technician will come to your home or office the next business day with the solution in hand.△

But if you just can't wait, don't.

TechFax offers relief for insomniacs.

Say you're pulling an all-nighter and need help. Dell has pioneered a service called TechFax. Anytime, 24 hours a day, you can pick up the phone and call the Dell technical library on our automated TechFax line. Detailed information on your Dell system will be faxed right back to you automatically.

And all this coverage, including a full year of field service, comes at no additional cost.

When your needs change, your computer can too.

Dell offers a number of ways to easily upgrade your system. Including a 33 MHz i486™ processor card to give you the hottest chip on the block. Which means you can get a new computer without getting a new computer.

For sale, for lease,◊ for less.

You can stretch your money even further with the most comprehensive credit, lease and lease-to-buy plans in the industry. So call us. Or talk to someone selling Compaqs. But be careful not to choke on the price.

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TURBOCHARGED.

Compaq has a peculiar proposition for you.

Even though their servers are configured similarly to Dell's, they want to charge you up to $16,000 more for them.

That's bad enough in normal times, but with the tight budgets these days it's ridiculous.

The New Dell Drive Array gives performance a boost. With the Dell Drive Array, we've overcome the two big problems that plague most servers: Slow disk subsystem performance, and the difficulty of ensuring data integrity.

Let's tackle slow performance first:

The Dell Drive Array is based on the Intel® i960 RISC processor. And, depending on the application, can deliver twice the storage I/O performance of a stand alone ESDI drive. Allowing more users to access the server more quickly for greater productivity.

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FOR FASTER PROCESSING PLEASE REFERENCE #11D33
HOURS: 7 AM-9PM CT M-F 8 AM-4PM CT SAT
IN CANADA CALL 800-387-5752

As for ensuring data integrity, the Dell Drive Array uses parity checking techniques. So a single disk can guard all the data on up to 4 other disks.

What's more, the Dell Drive Array also uses a standard high performance SCSI software interface. Instead of Compaq's proprietary interface. Which means you can get up and running in just about every operating environment, without rewriting your device drivers.

$15,099

*Lease: $572/month***

The Dell® 433TE, 33 MHz i486™ Server

1 Array, 5 200 MB hard drives, 8 MB of RAM, 128 KB cache

THE DELL SYSTEM® 433TE 33 MHz i486 EISA AND THE DELL SYSTEM 425TE 25 MHz i486 EISA.

STANDARD FEATURES:

- i486 microprocessor running at 33 MHz (433TE) or 25 MHz (425TE) with 8 KB internal cache.
- 128 KB external cache (433TE).
- Standard 4 MB of RAM,* expandable to 64 MB (eight internal SIMM sockets, each accepting a 1 MB, 2 MB, 4 MB or 8 MB SIMM, installable in matched pairs).
- Socket for WEITEK 4167 math coprocessor.
- 11 internal half-height drive bays.
- Eight 32-bit EISA expansion slots (six EISA master slots and two EISA slave slots).
- High-performance IDE (80 MB, 100 MB, 190 MB and 330 MB) and ESDI (330 MB, 650 MB) hard disk drives.
- SmartVu™ —Advanced systems diagnostic display.
- 12 month on-site service contract.

VGA Color Plus System with Array of 5 200 MB hard drives

433TE, 8 MB RAM* 33 MHz	$15,099
425TE, 8 MB RAM* 25 MHz	$13,199

The Dell Systems 433TE and 425TE ore class A devices sold for use in commerciol enviranments only. *Performance Enhoncements: Within the first megabyte of memory 384 KB of memory is reserved for use by the system to enhonce performance. The 433TE is photographed with optional extros. All pnces ond specifications ore subject to chonge without notice. Dell connot be responsible far errors in typography or photography. †Source: From Compoq October 15, 1990 price list. **Payment based on 36-month, open-end lease. °Leasing arronged by Leasing Group, Inc. In Conada configurations and prices may vary. Dell ond DELL SYSTEM ore registered trodemarks ond SmartVu is o trodemark of Dell Computer Corporation. Intel is o registered trodemark and i486 is o trodemark of Intel Corporation. UNIX is o registered trodemork of AT&T in the U.S. ond other countries. Other trodemarks and trade nomes ore used to identify the entities claiming

OVERCHARGED.

$30,698†

Compaq SystemPro 486/33, 33 MHz i486 Server
1 Array, 4 210 MB hard drives, 8 MB of RAM, 512 KB cache
Actual dealer prices may vary.

Maintaining servers can be beyond Compaq dealers. If a server goes down, your whole company can go down.

With Compaq, you have to trust the dealer who sold it to you to fix it. With Dell, you deal directly with us, the company that designs and manufacturers your servers.

Which means you'll be working with a telephone support staff that solves 90% of all problems over the phone. Generally in 6 minutes or less.

And because Dell is an AT&T UNIX® source code licensee and validates compatibility with Novell and Banyan, you can be sure your technician knows quite a bit about networking too.

But on those rare occasions we can't solve your problem over the phone, a trained service technician will come to your office with a solution in hand.△

Dell has even pioneered a new 24-hour TechFax line which automatically faxes you detailed information about your Dell System from the Dell technical library.

And all this coverage, including a full year of field service, comes at no additional cost to you. Pretty good for a service package that won eight *PC Week* Corporate Satisfaction Polls.

There's a lot more to know when you buy a server. From the first moment you call Dell, and for as long as you own your system, we'll work with you and answer any questions—from service and technical issues or the wide variety of credit, lease or lease-to-buy plans available.◇

So if you're looking for a server that will soup-up your network without blowing your budget, call Dell.

Unless, of course, you like being overcharged and underserviced.

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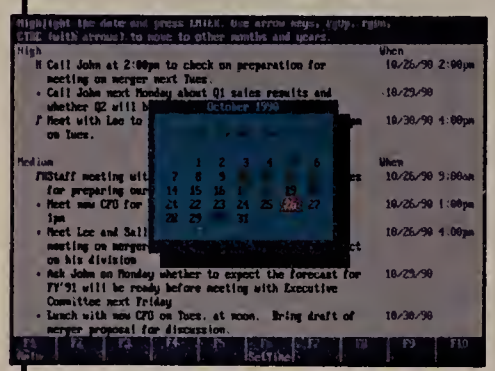
Which is why you should buy new Lotus® Agenda® Release 2.0. It's the personal information manager for your PC or laptop that will help you get better control of information like appointments, personnel, figures, projects, stray thoughts and more, in only 30 minutes.

Just type it all in and Agenda sorts it out, grouping relevant information in an organized, easy-to-read format.



Lotus Agenda 2.0 is so easy to work with, you'll start getting better control of your professional life within 30 minutes.

Choose from the ready-to-use starter applications, including the Activities Planner, People Manager, Account Manager or Information Sifter. Or customize applications for more specific needs. If it all sounds too good to be true, consider what these Agenda users have to say: "All of those notes, pads, and slips of paper that littered my desk are gone... I just put them into Agenda."

—Grant Tipler, Manager, Corporate Banking, Head Office, The Royal Bank of Canada

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Lotus Agenda

Finally, a word to everyone who read this ad all the way from the beginning.

Your ten minutes are about up. Get back to work.

Introducing New Lotus Agenda 2.0

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HP's Net-Worthy Improvement

Big, fast, and built to take a pounding, HP's LaserJet IIISi may set a new price/performance standard for network printers.

Fast printing and brawny paper handling make the IIISi a boon for LAN users.

Daniel Tynan

Nineteen ninety-one may not be the year of the LAN, but it's definitely the year of the LAN *printer*. Texas Instruments, Sharp, and Kodak have all announced affordable 16-page-per-minute (ppm) lasers with the speed, durability, and paper handling to serve scores of network users. But none is likely to have greater impact than HP's LaserJet IIISi.

The IIISi gives you the scalable fonts and high-quality output of the LaserJet III in a 17-ppm workhorse. At $5495, it's bound to win the hearts of companies accustomed to printers like HP's $20,000 20-ppm LaserJet 2000.

Speed, Finesse, and Power

The HP's 17-ppm 300-dpi Canon engine is only half the story. Unlike the 16-ppm machines, the IIISi's high-speed interface and fast RISC processor enable it to churn out complex fonts and graphics at near its rated engine speed.

The IIISi's parallel interface sucks in data at 38K per second—twice the rate of standard parallel ports. Optional $695 ethernet or $795 token ring boards take in files at a blistering 160K per second and let you install the printer anywhere on the LAN without having to hook it to a PC.

A 16-MHz AMD 29000 chip makes fast work of PCL 5 fonts and graphics (like those found in the original LaserJet III), but its real forte is processing PostScript files. Another $895 buys you Adobe PostScript's 35 scalable fonts and graphics savvy. However, the IIISi can't switch automatically between PCL 5 and PostScript; you'll have to do it from your application—and once you switch, you'll lose any fonts you've downloaded.

The IIISi comes with 13 scalable font outlines (plus 14 bit-mapped fonts for emulating the LaserJet II) and two backward-compatible font cartridge slots. The unit's rather skimpy 1MB of RAM expands to a whopping 17MB for downloading fonts and spooling print jobs. You'll need to add RAM, via 1MB ($139) or 4MB ($449) SIMM modules, if you want to print full-page graphics or legal-sized documents or to access HP's PostScript or $695 duplex options.

Sharp Text, Low Cost

Neither Kodak, TI, nor Sharp can match HP's patented Resolution Enhancement Technology (RET), which varies the size and placement of toner dots for smoother text and curves. The IIISi's special microfine toner particles enhance RET's effects and lower print costs to about 2 cents a page (8000 pages per $169 cartridge), a penny cheaper than most lasers.

The printer is built to handle 50,000 pages a month. Two 500-sheet input trays are standard, as are sophisticated collating features and an output-tray–full sensor.

As more companies jump on the LAN-wagon, the office laser will be expected to do a lot more—quickly, and for a reasonable price. The LaserJet IIISi meets those expectations, and then some.

Daniel Tynan is an associate editor for PC World.

SNAPSHOT

HP LaserJet IIISi

HP's latest LaserJet combines high-quality output with the power to handle big LAN work loads.

KEY FEATURES

- **17-ppm engine with fast RISC processor**
- **High-speed interface and flexible networking options**
- **Low-cost operation**
- **Sophisticated paper handling**
- **One year on-site warranty**

AVAILABILITY

March 1991

PRICING

$5495; $6595 with PostScript installed

Hewlett-Packard
Customer Information Center
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900

Reader service no. 708

Never

Peter Norton

When it comes to your crucial data, Peter Norton just won't take **C>FILE NOT FOUND** for an answer. With programs like the Mace Utilities® and PC Tools,® data recovery is often mission impossible. But with the Norton Utilities® 5.0, data recovery is mission *critical*—and it can recover what no other utility can.

Data Recovery is serious business, which requires serious features. And the Norton Utilities has them all.

Norton Does Windows.

The Norton Utilities is *the* safe DOS utility program for use with windowing environments like Windows® 3.0 and DesqView.

Because PC Tools and Mace Utilities are blind to multitasking, they can irreversibly damage your files. While the Norton Utilities 5.0 offers three full levels of safety checks under Windows 3.0.

With a clear vision of the PC's future, the Norton Utilities 5.0 provides safe Windows 3.0 recovery.

DATA RECOVERY FEATURES	NORTON UTILITIES	PC TOOLS	MACE 1990
Number of DOS Error Messages With On-Line Advice	75	0	0
Different Types Of Data Loss Problems Solved			
File System Corruption	31	12	15
Physical Hard Disk Damage	6	0	0
Internal Data File Damage (i.e. dBASE, Lotus)	10	0	6
Disk Reliability Testing (Number Of Patterns)	80	0	0
System Information (Topics Reported)	94	15	16
NETWORK file recovery *File Save must have been installed prior to data loss.	YES*	NO	NO
WINDOWS Safe Operation	YES	NO	NO
Failsafe Design	YES	NO	NO
Effective File Encryption That Does Not Require You To Change The Way You Work	YES	NO	NO

Norton On Networks.

The Norton Utilities is the *only* utility program that provides file recovery on Novell and DOS-compatible networks. So you can use *File Save* along with *UnErase*® to recover deleted files,* or *File Fix*™ to reconstruct Lotus® 1-2-3® and dBASE® files. From any node on the network.

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System Information provides detailed reports on network information and TSR memory allocation, as well as graphical benchmarks of disk, CPU, network, and general computer performance.

The next best thing to being there is being on the network. And the Norton Utilities 5.0 is the only data recovery tool that is.

Say Die.

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Norton's Superior Recovery Technology.

Norton Utilities 5.0 Adds Features, Improves Interface

"Norton's disk utilities now surpass anything you can find in *PC Tools Deluxe* or *The Mace Utilities*, and offer safeguards you can't find anywhere else."
—PC Magazine 10/16/90

Don't just take our word for it, the proof is in the press.

The Norton Utilities handles the toughest data recovery situations easily—predicaments other utilities handle poorly, if at all.

Advise explains cryptic DOS error messages in plain English so you can understand the problem, and gives specific recommendations on how to fix it. So your valuable data is not at the mercy of risky trial-and-error procedures.

Unlike the competition, Norton recovery procedures are easy to use and completely failsafe. And because you can UNDO changes, you won't make a bad situation worse. In fact, while using the Norton Utilities your data will even survive a sudden power loss. All in all, it's the safest, most extensive diagnostic and recovery utility available.

And only the Norton Utilities gives you everything you need for optimal system performance. The new *Norton Cache* and the improved *Speed Disk*™ make your hard drive faster and more efficient. And *Calibrate*,™ which outperforms SpinRite,™ adjusts the interleave, identifies bad sectors, and even repairs demagnetized areas of your drive.

So get serious about data recovery. See your dealer for the new Norton Utilities 5.0. To upgrade now call **1-800-343-4714** or fill out the coupon below. For more information, call **1-800-343-4714 Ext. 708** (in Canada, 1-800-465-2266). And in the immortal words of Peter Norton, "Never say die."

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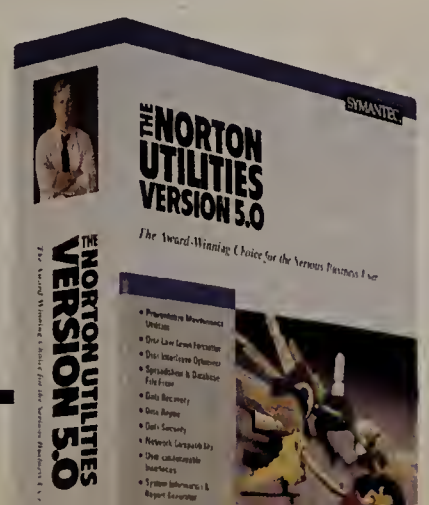
Upgrade Now and Save $120!

Mace Utilities and PC Tools users can now get the Norton Utilities 5.0—list price **$179**—for **$59**. Just send this coupon to Symantec, along with the title page from your Mace Utilities or PC Tools product manual. Send a check or have us bill your VISA or MasterCard $59 plus tax and $5 shipping and handling.

Norton Utilities 5.0 offer expires April 30, 1991. Valid in U.S. and Canada only. Please allow 4-6 weeks for delivery. Only one upgrade per coupon. For multiple upgrades or POs, call 1-800-441-7234. For Canadian orders, call 1-800-465-2266.



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Total:		

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Cupertino, CA 95016-1690

PC, April '91

Circle 279 on reader service card

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Requires MS-WINDOWS 3.0

Circle 48 on reader service card

PRODUCT OUTLOOK

Edited by MIKE HOGAN

Mannesmann Tally MT735

Letter-Quality Printing: Don't Leave Home Without It

The 8.3-pound MT735 fits in a briefcase and gives you 300-dpi output at up to 6 pages per minute on the road.

Anybody who says you can't take it with you has not been paying attention to the PC printer market. The Canon BJ-10e and Seikosha LT-20 prove you no longer have to wait until you get back to the office (or even for your plane to land) to produce good-looking hard copy. Mannesmann Tally goes these offerings one better with a portable thermal transfer printer that offers laserlike performance.

The Mannesmann Tally MT735 is heftier in weight and price than the Canon and Seikosha printers, which weigh less than 6 pounds and cost under $600. But it's much faster than its ink jet and dot matrix competitors and claims output quality rivaling that of the LaserJet IIP.

The MT735 produces 300-dpi output at up to 6 pages per minute—not bad for a machine that still weighs only 8.3 pounds and measures about 11 by 9 by 2½ inches. The $1295 MT735 is slim enough to fit inside your briefcase or sit between your pencil sharpener and Rolodex. Its built-in NiCad battery is good for 150 pages between recharges.

Like the IIP, the MT735 comes with seven portrait and seven landscape fonts in Courier, Times, and Helvetica equivalents. Its 1MB of RAM should be enough to print a page of mixed text and graphics, but you can't add more memory, and only 178K is available to download fonts.

The MT735's unique copy function automatically stores the last page printed in memory, letting you print multiple copies at the flick of a switch—a quick way to duplicate short documents when you're miles from the nearest photocopier.

In addition to the IIP, the printer emulates the HP DeskJet, IBM Proprinter X24, and Epson LQ850 printers. It handles letter and legal-sized paper and transparencies and comes with an 80-page sheet feeder. While you can print text using plain paper, high-quality, smooth-surface paper is recommended for graphics printing, but you still can avoid using the waxy thermal stuff.
—*Daniel Tynan*

IN BRIEF

Mannesmann Tally MT735
The $1295 MT735 offers high-speed, laserlike printing in a box you can take almost anywhere.

Mannesmann Tally
8301 S. 180th St.
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206/251-5520 (fax)
Reader service no. 636

INSIDE PRODUCT OUTLOOK

88 **Ektaplus 7016 Printer** Kodak's multitalented network printer includes a built-in copier.

88 **IBM Token-Ring Network 16/4 Busmaster Server Adapter/A** Boost LAN throughput by up to 25 percent with an MCA board.

90 **PS/2 Model P75 486** A heavy-duty portable for heavy data slingers.

90 **Open Systems Accounting Software 4.0** Modules that were lacking are brought up to snuff.

92 **Z-486/25E, Z-386 SX/20** Advanced and basic *Windows* workstations.

94 **Project Scheduler 5** Now your updates to a major project can ripple through all related projects.

94 **Profitwise** Small businesses get top-of-the-line fault tolerance to guard accounting data.

96 **ZoFax 96/24P** Send faxes from your laptop with a palmtop-sized fax-modem.

98 **MouseMan Cordless Radio Mouse, Cordless Super Mouse** Liberate your desktop with a mouse that runs without a leash.

98 **Voice-It for Spreadsheets, Voice-It for Word Processing** Give users a guided tour of your worksheets or documents by attaching audible comments.

Ektaplus 7016 Printer

Get Faster Printing and a Copier Too

The Ektaplus 7016 brings you everything you could ask for in a network printer, plus a 6-ppm convenience copier.

Barely a ripple at COMDEX Fall, now there's a tsunami of 16-page-per-minute printers rolling in to carry work-group users to new levels of productivity. You can find many a worthy offering between trough and crest, with price tags that match some innovative capabilities. (For example, your options extend from the $3295 Sharp JX-9700 to the $5495 HP LaserJet IIISi, previewed in this issue.)

Kodak packs its new Ektaplus 7016 with the full range of features and even adds something unique—a 6-ppm copier. Kodak calls it a convenience copier, meaning that it isn't intended to replace your office workhorse; it just lets you whip off a few quick copies now and then without having to leave your work area. It shares the printer's film belt, toner, and developer but uses neither the LED printing element nor the controller of the Ektaplus, so that your work group's spooled print queue can take up where it left off within 60 seconds.

The copier is the crowning touch of a first-cabin printer well equipped for network duty. The first in a line and able to hook into any node, the Ektaplus has a conservatively rated 15,000-pages-per-month duty cycle and two 250-sheet cassette trays. You can print letterhead and plain paper up to 8½ by 14 inches alternately or have a 500-sheet print run of the same stock. The top tray has a manual single-sheet and a number 10–size business envelope feeder. The single output tray handles 200 sheets. Labels and transparencies feed reliably through the paper path.

The Kodak-designed controller has a 10-MHz Motorola 68010 microprocessor and 2MB of RAM upgradable to 4MB. You can allocate up to 1.25MB of that as a page buffer, enabling the controller to compile a full 8½ by 14, bitmapped page all at once.

The remaining RAM can be used to hold downloadable fonts or macros or as a large print spooler. You'll want a large spooler, because you can configure the Ektaplus with up to four serial or parallel ports in any combination (one of each comes standard) and address all of them simultaneously. The Ektaplus dynamically allocates the right amount of buffer to each port and queues print jobs on a first-in, first-out basis by constantly polling the ports.

There isn't automatic emulation switching between ports, each of which must be set to one of the standard emulations—PCL 4.5, HPGL-2, Epson FX-80, IBM Proprinter, and Diablo. But the environment is preserved so you don't lose any fonts you've downloaded. You also can get Adobe PostScript with the standard 35 fonts on a $1995 daughterboard. It carries its own Motorola 68020 and 4MB of RAM dedicated to nothing but PostScript.

The basic printer is $5495 with 30 resident fonts that include the standard 14-font PCL 4.5 lineup and Bitstream portrait and landscape fonts. A PostScript-equipped Ektaplus is $6995. Both models have a front slot that takes additional Kodak ROM cards. The single cartridge toner/drum results in a 3½-cents-per-page cost for consumables. —*Mike Hogan*

IN BRIEF

Ektaplus 7016 Printer
The 16-ppm Ektoplus 7016 hos all the most innovotive work-group features and throws in a 6-ppm convenience copier for good measure.
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IBM Token-Ring Network 16/4 Busmaster Server Adapter/A

Bus Master Boosts LAN Performance

Since its 1987 introduction, the promise of the PS/2's Micro Channel architecture (MCA) has been its ability to boost overall system performance by offloading certain processor-intensive tasks to bus-master cards. Despite the previous introductions of third-party products, that's been a promise that has gone largely unfulfilled—that is, until now.

MCA comes of age with IBM's new Token-Ring Network 16/4 Busmaster Server Adapter/A, an add-in board that promises to increase throughput on a LAN as much as 25 percent by letting its onboard processor take LAN management duties off the shoulders of the server's main processor.

Designed to run in the servers of token ring LANs where many users might access the same applications or run multiple applications, the card's bus-master chip controls transmission and reception of data to and from the network, bypassing the main CPU.

The Busmaster Server Adapter/A supports token ring LANs having either 4- or 16-megabit-per-second data transfer rates. Currently, Novell's NetWare 386 version 3.1 and Banyan Systems' VINES network operating systems support the product.

The $1030 adapter comes with diagnostics that perform a self-test when the server is turned on and off. —*Cheryl Goldberg*

IN BRIEF

IBM Token-Ring Network 16/4 Busmaster Server Adapter/A
A token ring odapter that supports bus mastering for better network performance.
IBM
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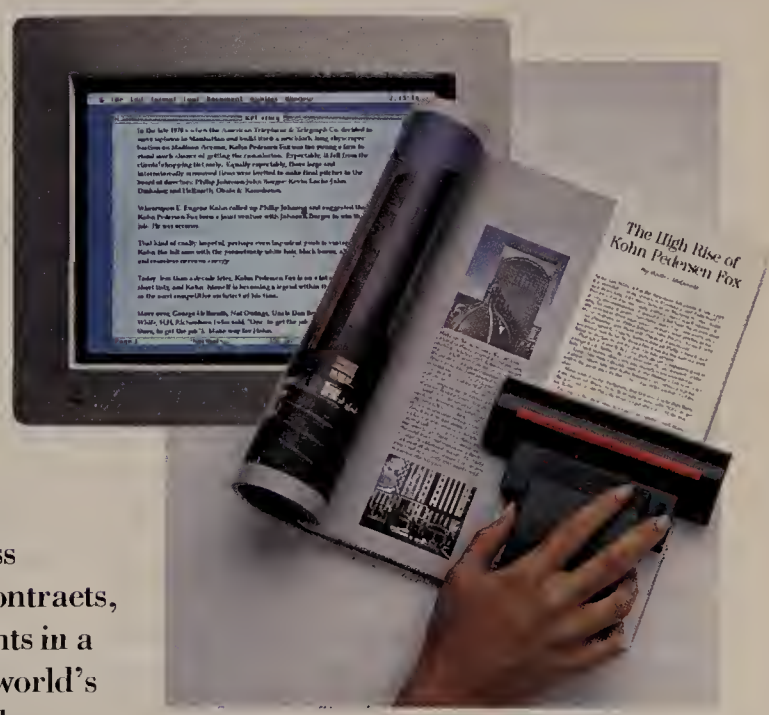

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PS/2 Model P75 486

IBM Portable Grabs Heavyweight Crown

As with everything, when it comes to portables IBM thinks big. And heavy. And expensive. And very, very powerful. The logical culmination of the IBM thought process is the PS/2 Model P75 486, a 22-pound speed demon built around a 33-MHz 486.

The P75 is aimed squarely at traveling professionals—particularly engineers and accountants who may need to tote a machine between sites on a less-than-daily basis and don't want to give up an ounce of performance or presentation muscle.

A "portable" cousin of IBM's XP 90 desktop, the P75 measures a substantial 18.3 inches wide by 12.1 inches high by 6.1 inches deep. It comes fully packed with 8MB of 70ns memory (expandable to 16MB on the system board), a SCSI controller, a 10-inch VGA gas plasma screen, a high-resolution XGA adapter with 1MB of VRAM for the fastest possible screen response, and a port for an external XGA monitor.

The P75 comes with the usual 3½-inch floppy drive, as well as serial, parallel, and mouse ports. Not so standard on portables are its full-sized 101-key keyboard, 120-watt power supply, two half-sized 8/16-bit slots, and two full-sized, 32-bit Micro Channel architecture slots—the latter making this an ideal networking portable. We're not just talking about a node on a network, either; thanks to the P75's SCSI port, you can connect up to six external SCSI devices to it—without using an expansion slot.

Internal storage is equally hefty. You can choose from two fast SCSI drives: a 16ms 160MB drive and IBM's new 11.5ms 400MB drive.

As you might expect, the P75 comes down heavy on pricing, too. The 160MB configuration sells for $15,990, while the 400MB version is $18,890. At those prices, the P75 isn't for everyone. But if you need a portable that puts most desktops to shame, IBM has your machine. —*Eric Bender*

At 22 pounds, the PS/2 Model P75 486 is not for the weak of knee, but it has enough processor speed, memory, and storage to please any traveler.

IN BRIEF

IBM PS/2 Model P75 486
The pricey P75 packs top-of-the-line PS/2 components into a very powerful but hefty portable package.
IBM
U.S. Marketing & Services
1133 Westchester Ave.
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800/426-2468
Reader service no. 634

Open Systems Accounting Software 4.0

OSAS Modules Get Windowing Interface

A batch of project- and job-oriented improvements, an all-new bank reconciliation module, and a face-lift bring the last and most vertical *Open Systems Accounting Software (OSAS)* modules up to par with those previously enhanced. This upgrade lets you use time billing and so on with the already upgraded 4.0 versions of the general ledger, accounts receivable, accounts payable, and payroll modules.

Besides linking with these modules, version 4.0 of time billing for professional and service firms also shares the program's new windowing interface, enhanced field editing capabilities, and expanded function keys. Additional enhancements include a redesign of the activity reports and job subtotals section in the work-in-progress journal, as well as the ability to sort work-in-progress detail items by a variety of criteria. A new fixed-price billing feature has been added so users can include expenses in a contract or bill them separately. New job summary and job profitability reports also are included in version 4.0, which sells for $1495.

Open Systems has also upgraded its construction-industry–specific module, Contractors Reporting, Accounting, and Financial Tools Package (CRAFT), and its fixed assets module so each can be used with the "big four" modules. As with the new time billing module, version 4.0 of CRAFT and fixed assets sports the new windowing interface. CRAFT 4.0 sells for $1995, fixed assets for $895.

The all-new *OSAS* bank reconciliation module, which ensures that bank accounts are in line with accounting records, allows for a six-character account identification. The number of accounts is limited only by available disk space. Bank reconciliation can be used as a stand-alone application or linked with other *OSAS* modules. The suggested retail price is $395.

Module upgrade prices vary depending on the version currently in use. System requirements include DOS 2.0 or later, 640K of RAM (with 512K available), a hard drive, and *OSAS Resource Manager*, which is $295 for the single-user version and $995 for the network version. —*Roberta Furger*

IN BRIEF

Open Systems Accounting Software 4.0
With a new bank reconciliation module and upgrades to other components, Open Systems has brought all its modules to the 4.0 level.
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GLOWING REVIEWS *PC Magazine* said it best in giving Fastback Plus its prestigious 1989 Editor's Choice Award: "Fastback Plus has virtually everything a backup program needs: top-speed performance, clear menus, every imaginable option, even a built-in macro program for automating complex tasks. A superb achievement."

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Z-486/25E, Z-386 SX/20

ZDS Aims at Top, Bottom of Windows Workstation Market

No matter what anyone tells you, to take full advantage of the new graphical *Windows 3.0* applications you'll need more than the average amount of processor speed, memory, and storage. Zenith Data Systems (ZDS) gives you a high road and a low road to full-fledged *Windows* productivity: the Z-486/25E and Z-386 SX/20, respectively.

The Z-486/25E is ZDS's first i486 computer and a compact EISA system to boot for server CAD or the most demanding desktop publishing uses. In addition to a 25-MHz processor and 4MB of RAM expandable to 64MB on the motherboard, the Z-486/25E features a new 64-bit memory bus to accelerate traffic between the two and enhance performance of complex and/or graphical applications. It can send 32-bit data to the processor and receive from memory at the same time. Three available 8/16/32-bit EISA slots speed I/O bus traffic and give you the option of adding bus-mastering cards.

The two Z-486/25E models offer integrated controllers to manage a standard 3½-inch 1.44MB floppy, another optional floppy, and one of two hard drives; you also get one parallel and two serial ports and support for the Weitek 4167 coprocessor.

The $8599 Model 80 comes with a 640 by 480 VGA card and has a 19ms 80MB hard disk. The $9999 Model 170 comes with a 16ms 170MB hard disk and employs a 1024 by 768 VGA-compatible Texas Instruments Graphics Architecture (TIGA) card. The TIGA card improves resolution, and its 60-MHz processor dramatically speeds up redrawing of images for users running graphics-intensive applications; it can be added to the Model 80 for $899. An optional 16-inch color VGA monitor handles either 1024 by 768 or standard VGA output and lists for $1999.

Zenith's Z-486/25E (above) makes a full-powered-but-compact Windows server for multiple Z-386 SX/20 workstations.

If you have a less demanding application and less to spend, the Z-386 SX/20 is a good, basic *Windows* workstation with plenty of power from the new 20-MHz version of the 386SX. That processor is bolstered by a 32K memory cache user-expandable to 128K. Included are 2MB of RAM (expandable to 16MB on the motherboard), the same drive offerings as the Z-486/25E, a VGA card, a 3½-inch 1.44MB floppy drive, four open 8/16-bit slots, and one parallel and two serial ports.

You can choose the Model 40 with a 28ms 40MB hard disk for $3499 or the Model 80 with a 19ms 80MB hard disk for $3999. The Z-386 SX/20 uses the same compact box as the Z-486/25E. Like all current ZDS 386 and 486 systems, both have a 101-key keyboard, a Microsoft Mouse, and DOS 4.01 and *Windows 3.0* preinstalled on their hard disks. —*Rex Farrance*

IN BRIEF

Z-486/25E, Z-386 SX/20
ZDS's new 25-MHz 486 and 20-MHz 386SX systems give you everything you need in a Windows workstation.
Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL 60089
800/553-0331
Reader service no. 635

Accutrak 2320

Drives Break Backup Speed Barrier

In the office, tape backup is preferable to floppy shuffling, especially for backing up a server or extra-large hard disk. But even with average-sized disks, the typical 1MB-to-4MB-per-minute data transfer leaves you drumming your fingers for quite a while.

The Accutrak 2320 will save a good deal of wear and tear on your fingernails by giving you breakthrough 13MB-to-26MB-per-minute data transfer speeds in tape drives that offer capacities of 320MB to 640MB per minicartridge.

The base model Accutrak 2320 has a SCSI interface and is bundled with Irwin's *EzTape 2.2* tape operating system (TOS). For $1495 you get impressive 13MB-per-minute transfer speed and 320MB capacity per cartridge.

But for just a few hundred dollars more, you can really turn on the speed and pack in the data; a $1795 version adds hardware data compression, doubling backup speed to a sizzling 26MB a minute and capacity to 640MB. The Accutrak 2320 can read cartridges written on any Irwin 40MB, 60MB, 80MB, or 120MB minicartridge system.

The menu-driven *EzTape* TOS supports DOS, OS/2, and UNIX/Xenix. It offers unattended backups and backs up a hard disk, individual files, or combinations of files selected by file-selection parameter (changed file only, non-EXE only, and so on). Irwin offers a Novell TOS, an OS/2 TOS, and a *Windows* TOS as options. —*Rex Farrance*

IN BRIEF

Accutrak 2320
Irwin's Accutrak 2320 breaks the backup speed barrier with 13MB-to-26MB-per-minute data transfers to minicartridges that can hold 320MB to 640MB of data.
Irwin Magnetic Systems, Inc.
2101 Commonwealth Blvd.
Ann Arbor, MI
48105-1561
800/421-1879,
313/930-9000,
313/995-8287 (fax)
Reader service no. 649

Now that you get the basics, here's why you should get the most popular backup software available.

LIKE A BOLT FROM THE BLUE,

your hard disk will eventually come crashing down. Manufacturers expect it. They even give hard disks an "MTBF" rating – the Mean Time Between Failures.

Before you lose your valuable data, back it up with Fastback Plus.

BACKUPS IN A FLASH With Fastback Plus, you can do things that DOS Backup never dreamed of. Like back up all your daily file changes in less than a minute. Or blaze through your entire hard disk at three megabytes a minute on 386 machines, or 10 megabytes in four minutes on an AT. It even formats your backup diskettes – automatically.

STRIKING SIMPLICITY Fastback Plus has three user levels – beginner, intermediate and advanced. Simple menus tell you how long your backup will take, and how many diskettes you'll need. And a unique data compression feature cuts the number of diskettes you need in half. You can even automate the entire process with one-touch macros.

DAZZLING SAFETY Only Fastback plus gives you reliable Advanced Error Correction. To illustrate, we punched a hole larger than a .22 calibre slug right through a backup diskette – and retrieved all the data! That's security. And if you need help dodging even bigger bullets, our technical support staff will surprise you with its courtesy and ingenuity. Just call, and you're guaranteed same-day service.

GLOWING REVIEWS *PC Magazine* said it best in giving Fastback Plus its prestigious 1989 Editor's Choice Award: "Fastback Plus has virtually everything a backup program needs: top-speed performance, clear menus, every imaginable option, even a built-in macro program for automating complex tasks. A superb achievement."

A POWERFUL GUARANTEE Use Fastback Plus for 30 days, and if you're not completely satisfied, return it for a full refund. You have nothing to lose. And everything to save.

FREE PYRO For a limited time, get a FREE copy of Pyro!™, our popular screen-saving program just for writing "Pyro" on the Fastback Plus registration card before you return it. That's a $49.95 value – free!

Call now for complete details and the dealer nearest you.

1 - 8 0 0 - 8 7 3 - 4 3 8 4

Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge, LA 70809 Sales Number: (800) 873-4384 Technical Support: (504) 291-9953

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Circle 71 on reader service card

Project Scheduler 5

New Work-Group, Viewing Capabilities Featured

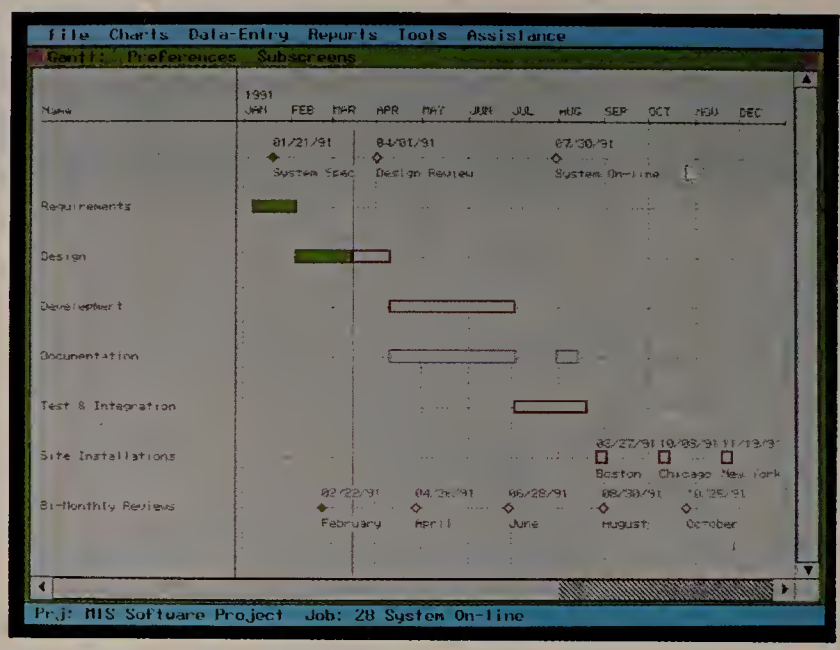
The latest release of Scitor's graphically based project management package, *Project Scheduler 5* lets you more easily consolidate independent schedules in your work group and adds expanded project viewing and multiple-report printing capabilities.

Most other project managers allow for some kind of consolidation of different projects by representing each subproject as a task in a master project that is merely a summation of those subprojects. Updating any of the tasks in the subprojects updates the master project, but it doesn't work the other way around. Scitor doesn't force you to make a common change by going through each of the subprojects independently: You simply identify the independent projects that are to be associated, which ensures that changes in the group-level plan stay consistent with each separate project and vice versa.

Project Scheduler 5 gives you new ways to conceptualize all of this, first by enabling you to show multiple milestones and activities on the same line in a standard Gantt chart. This allows you to get a condensed view of the Gantt chart, showing a whole project with its series of activities on a single page. Depending on the level of detail you depict, you may be able to get more than one project on a page.

The update also gives you a new way of viewing and building a project. Many organizations plan their projects by subject area rather than by logical or time sequence, breaking tasks into more detail as departments demand. *Project Scheduler 5* enhances this approach by letting you create a "tree" chart called a Work Breakdown Structure (WBS), which lets you eliminate the time dependency among tasks so that you can get tasks into the system that later can be linked logically in the critical path method.

Also new is a batch reporting function that allows you to store and print different views or slices of a project in independent reports. To print, say, the tasks of different work groups in different reports, you turn on a macro recorder, make the necessary changes, and store them as a report type. Once created, these named reports for the different work groups can be rerun every time the tasks change.



Project Scheduler 5 lets you include different levels of detail in your Gantt charts and other types of graphs.

Other new features include the ability to add text around the bars in a Gantt chart and to update the status of an activity by dragging the bars in the chart with a mouse rather than by keying in numbers.

Project Scheduler 5 requires DOS 2.1 or later, 640K of RAM, and a hard disk and costs for $685. Until April 30, registered *Project Scheduler 4* users can upgrade for $150. —*Mark Burgess*

IN BRIEF

Project Scheduler 5
Project Scheduler 5 makes it easier to consolidate multiple projects and provides you with new ways to look at and build your master schedule.

Scitor Corporation
393 Vintage Park Dr.
#140
Foster City, CA 94404
415/570-7700
Reader service no. 642

Profitwise

High-End Fault-Tolerant Features Added

Although version 2.0 of *Profitwise* is an integrated accounting program geared toward small businesses, it includes several fault-tolerant features for data integrity that rival those of high-end systems.

Version 2.0 saves your critical accounting data in a variety of ways should you encounter a system problem or power failure. For example, if your system goes down while you're in the middle of running the weekly payroll, the process restart function lets you pick up where you left off once power is restored. Using transaction rollback techniques common among minicomputer-based systems, *Profitwise* monitors an entire transaction and does not update the data base until it's completed. Using a separate file outside the accounting data base, *Profitwise* prompts users to complete the transaction when they log back on to the system.

The program also maintains a detailed transaction log of all keystrokes since the last system backup for easy reconstruction of data in the event your accounting data base becomes unusable.

Version 2.0 lets users choose between cash- and accrual-based accounting.

The $229 *Profitwise 2.0* requires DOS 3.1 or a later version, 640K of RAM, and a hard drive. It includes general ledger, accounts payable, accounts receivable, payroll, invoicing, inventory, job costing, fixed assets, address management, and system manager applications. Upgrades are available for $99. —*Roberta Furger*

IN BRIEF

Profitwise
The first major upgrade of *Profitwise* brings fault-tolerant capabilities to small-business accounting.

Solomon Software
P.O. Box 414
Findlay, OH 45839
800/879-2767
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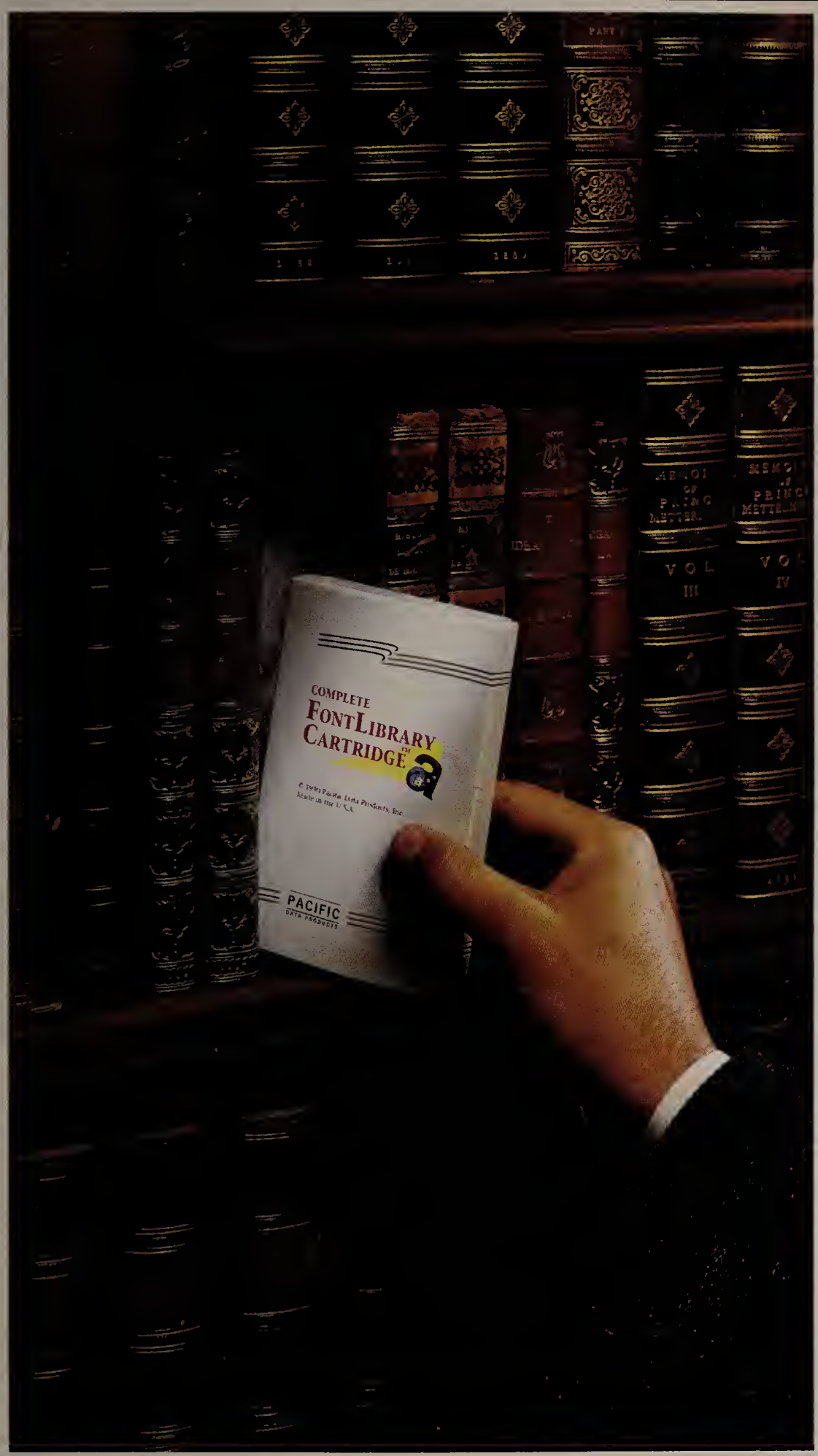
Where can you get every font you'll ever need for your LaserJet III?



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AGFA Agfa

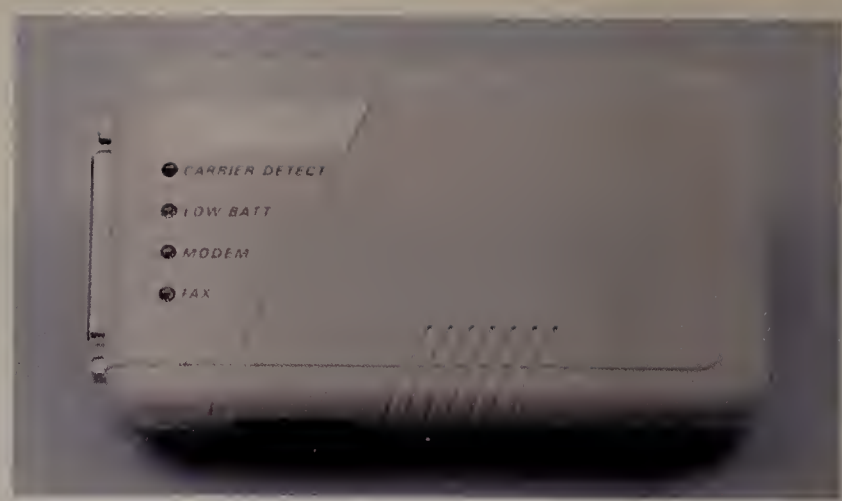
ZoFax 96/24P

A Pocket Fax-Modem for the Road

It isn't long after you get your laptop that you find yourself wanting to send data from the road. Not long after that, you'll want to send faxes. Most laptops have a modem option, but few offer a fax or even a slot for a third-party board.

The hand-sized ZoFax 96/24P meets your data and fax needs for as little as $350. Hooking into your laptop's serial port, the 2½-by-5-inch ZoFax sends and receives CCITT Group III faxes at 9600 bps and data transmissions at 2400 bps or faster. A Plus version costs $435 and uses MNP 5 error correction/data compression to improve the reliability of transmissions over noisy voice lines.

Zoltrix bundles Bit Software's *Bitcom* (to handle modem communications) and *Bitfax* with both ZoFax 96/24P and ZoFax 96/24Plus to let you schedule fax transmissions, direct incoming faxes to printer or disk, and even send multiple files.



With the palm-sized ZoFax 96/24P, you can send Group III faxes from your laptop computer.

ZoFax lets you send and receive faxes in the background using the TSR part of *Bitfax*. But since there's no on-board coprocessor to handle communications chores, you'll notice some slowdown in foreground applications while receiving, and still more while ZoFax sends your faxes. Also, the TSR takes 78K of lower-640 memory and can't be loaded in high DOS memory.

ZoFax is a couple hundred dollars under competitors. Included are an AC adapter, a 9-pin and 25-pin serial connector, a 6-foot phone cord with modular phone jack—even a battery and a carrying case that you can clip on to your belt. —*Mark Henricks*

IN BRIEF

ZoFax 96/24P
The ZoFax 96/24P is an economical, full-featured fax-modem solution for laptop users.
Zoltrix Inc.
41394 Christy St.
Fremont, CA 94538
415/657-1188,
415/657-1280 (fax)
Reader service no. 638

8514/Ultra, Icon Photo Board

Smooth Boards

Working with the often-tiny design elements of CAD or publishing files can be frustrating, especially if you have less than a jumbo monitor. But new graphics boards from ATI Technologies and Icon Technologies promise to ease your eyes with anti-aliasing methods that smooth the "jaggies" out of curved and diagonal lines, clean up print previews, and make even 6-point type legible.

These boards take different paths to produce that result: ATI uses software fonts to smooth the edges, while Icon uses a special chip from Edsun Labs. The Icon board has more colors and greater legibility; the ATI 8514/Ultra offers more speed.

ATI's 8514/Ultra is somewhat more limited than the Icon board in that it can anti-alias text under *Windows 3.0*, but not for DOS applications. Small text is made legible using ATI's Crystal Fonts, which can be scaled "on the fly." The 8514/Ultra bundles 13 PostScript fonts—including Times Roman and Helvetica—occupying as little as 30K per font family.

The 8514/Ultra also includes a proprietary Mach 8 graphics coprocessor that, according to ATI, can increase the speed of CAD applications, desktop publishing, and *Windows 3.0* by a factor of 10. The 8514/Ultra includes both super-VGA and 8514/A 1024 by 768 noninterlaced modes, which refresh screens one line after another to reduce flicker.

If you have an internal VGA connector, you can still use your old VGA card with this board or you can buy the 8514/Ultra + VGA that includes the VGAWonder + adapter built onto the Ultra board. It is $100 more than the regular 8514/Ultra, which includes 512K for $599 or 1MB for $799.

The Icon Photo Board is a VGA board that uses the new Edsun Labs chip to alleviate jaggies on the rounded edges of letters and graphics. The chip emulates 24-bit True Color displays, offering an effective resolution of 2048 by 1536 with up to 786,432 simultaneous colors out of 16.7 million on a standard VGA monitor.

Selling for $475 with 1MB of memory, the Photo Board has IBM VGA compatibility and will support a 1024 by 768 noninterlaced monitor and resolutions of 800 by 600 and 680 by 480. Icon's library includes drivers for *Windows 3.0*, *AutoCAD/AutoShade*, *1-2-3* and *Symphony*, and *Micro Station PC*. As a bonus, the Photo VGA Board allows spreadsheet gurus to take advantage of a 132-column driver for *1-2-3* and *Symphony*.

If you're a CAD or DTP user, the Icon Photo Board can give you more color with greater legibility. If speed is what you're after, the ATI 8514/Ultra may be a better choice. —*Susan Lusty*

IN BRIEF

8514/Ultra, Icon Photo Board
The 8514/Ultra and the Icon Photo Board give you clearer text and graphics on your screen at VGA and greater resolutions, and speed and color enhancements.
ATI Technologies Inc.
3761 Victoria Park Ave.
Scarborough, Ontario
Canada M1W 3S2
416/756-0718,
416/756-0720 (fax)
Reader service no. 645

Icon Technologies
317 Varsity Park #8
15th St. NW
Charlottesville, VA 22903
800/933-3731
Reader service no. 646

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Circle 57 on reader service card

MouseMan Cordless Radio Mouse, Cordless Super Mouse

Freewheeling Mice

There's no doubt that a conventional mouse can be pesky at times, taking up space on your desktop and getting tangled with papers and coffee mugs. Both Z-Nix and Logitech take your mouse off its tether, letting you roll it around any part of your desktop that's convenient.

A cordless mouse retains the same basic shape and mechanical principle as a regular mouse, but instead of a cord, the mouse houses a transmitter that sends signals to a stationary receiver plugged into your PC. The Cordless Super Mouse from Z-Nix uses infrared signals; Logitech's MouseMan Cordless Radio Mouse uses radio waves.

The Cordless Super Mouse operates like the remote control for your TV or VCR and requires a clear line of sight between mouse and receiver. The receiver takes in signals within a 90-degree arc side to side and up and down from its electronic eye and from as far away as 6 feet. The receiver, which doubles as a mouse stand and battery charger for the mouse's two 8-hour batteries, can be placed on your desktop or your PC. One of the two one-year batteries is being recharged in the receiver while the other is being used by the mouse.

The MouseMan Cordless Radio Mouse is the first radio-controlled mouse on the market. It runs on a frequency low enough not to interfere with other machinery on your desktop and has an operating range of 6 feet in a 360-degree circle around the receiver. Similar to a cordless telephone or garage-door opener, the receiver for a radio-controlled mouse can be located anywhere within its receiving range, even under your desk, and it doesn't mind clutter; but it has to function at specific frequencies so it doesn't interfere with other equipment in your office or your neighbor's.

Cordless Super Mouse and Mouseman Cordless Radio Mouse (above) rove without a leash.

All MouseMan units initially are set to the same default channel within the frequency, but they come with up to eight channels so that if you're operating within one meter of another MouseMan, you can switch channels. The MouseMan runs on a common lithium battery, and it sustains its one-year life by running at lower levels when the mouse is not active.

Both the Cordless Super Mouse and the MouseMan Cordless Radio Mouse connect to a serial port on your PC and work with any Microsoft Mouse–compatible software. Special utilities bundled with the hardware can modify keyboard-based software to work with the mouse. The Z-Nix Cordless Super Mouse retails for $164.95, while the Logitech MouseMan is $199. —*Melissa Riofrio*

IN BRIEF

Cordless Super Mouse, MouseMan Cordless Radio Mouse
See how they run: Get greater desktop maneuverability with either the infrared Cordless Super Mouse or the radio-controlled MouseMan Cordless Radio Mouse

Z-Nix Co., Inc.
211 Erie St.
Pomona, CA 91768
714/629-8050,
714/629-4792 (fax)
Reader service no. 643

Logitech Inc.
6505 Kaiser Dr.
Fremont, CA 94555
415/795-8500,
415/792-8901 (fax)
Reader service no. 644

Voice-It for Spreadsheets, Voice-It for Word Processing

Tell It Like It Is, Hear It Like You Tell It

Ever get lost in your spreadsheet formulas or wish that you could point out the critical or overly technical parts of your business reports to your readers in layman's terms? By using the voice annotation capabilities of *Voice-It*, you can add your perspective to thorny *WordPerfect* documents and *1-2-3* spreadsheets. These $99 programs use the Artisoft LANtastic Voice Adapter Board, which is bundled with the Artisoft Handset. If you don't already have this hardware, you can buy it with the software for an extra $100.

After *Voice-It* is installed, it resides within the utility section of your main application (so far, it supports only *1-2-3* or *WordPerfect*), and you can call it using hot keys.

First, place your cursor on the cell or paragraph that you want to explain, then activate *Voice-It* by hitting <Alt><F7>. Type **R** (for record) and talk away into the Handset. When you're finished, type **Q**, and the utility closes and returns you to your application. Although you can talk all you want, be prepared to pay the piper in kilobytes—expect 480K of hard disk space to disappear for each minute of speech (248K if compressed).

IN BRIEF

Voice-It for Spreadsheets, Voice-It for Word Processing
Voice-It lets you clarify *1-2-3* spreadsheets and *WordPerfect* documents by attaching voice notes.

Voice-It, Inc.
1001 Snowden Farm Rd.
Collierville, TN 38017
901/853-4456
Reader service no. 647

So how do your readers know where to find your pearls of wisdom? In *1-2-3* they can run a search function that will generate a list of the cell numbers in which notes appear. Or they can invoke *Voice-It* to find the audio notes for them. *Voice-It* for *WordPerfect* uses markers within the text to visually aid users in locating and playing the notes. Of course, they always have the option of plowing through the numbers or words sans audio notes or repeating audio notes along the way.

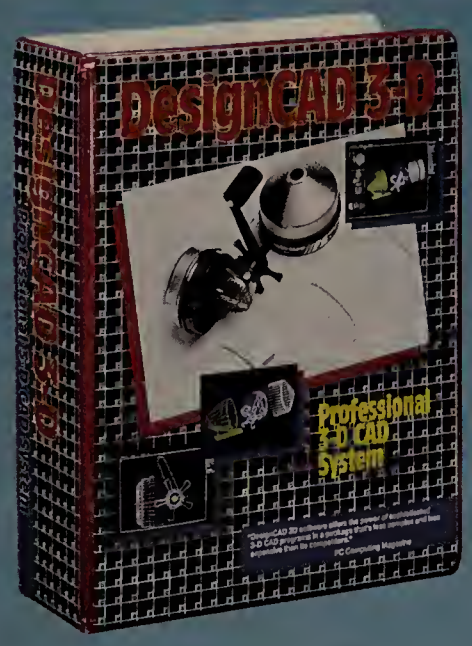
Your *Voice-It*-annotated files can travel across any local area network as binary text files or be stored on floppies. *Voice-It* is available for *1-2-3 2.x* and *WordPerfect 5.x* formats. Support for ASCII files is anticipated around midyear. Expect the *1-2-3* version of the utility to take up 40K of conventional memory; the *WordPerfect* version will use 75K. Also tack on an additional 6K for the LANtastic Voice Adapter. —*Cathy Smith*

AW... WHAT THE HECK!

Let's see the other guys beat this Price!

If there ever was a CAD program out to prove that AutoCAD, CADKEY, VersaCAD, and other $3000 programs are overpriced, it's DesignCAD!
(MicroCAD News review)

DesignCAD 3D



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Does this include everything?

Yes. We include everything! The programming language, the hardware device drivers (more than 450), built-in shading capability, hidden line removal capability, solid-object modeling capability, translators to-and-from other file formats, are all included!

How can you afford to sell a program like this at such a low price?

This is our most often asked question. We have a simple answer. Volume. We sell thousands of these programs each month! If we were to charge thousands of dollars per copy (like our competitors) we would restrict our sales to the professional trades only. By lowering our price we sell to professional architects and engineers as well as the ordinary individual!

Many ordinary individuals purchase DesignCAD 3D for personal projects. Many people purchase DesignCAD 3D and perform CAD Drafting at nights and on weekends as a second job! People design "dream homes" and "widgets". The uses are limited only by YOUR imagination!

Remember - American Small Business Computers also sells a 2D version of DesignCAD. It costs only $299! Write or call for FREE brochures that will help you determine which program best suits your need.

American
Small Business Computers, Inc.
327 South Mill Street • Pryor, Oklahoma 74361
(918) 825-4844 • FAX (918) 825-6359

Circle 306 on reader service card

VoiceFax

Callers Get Faxes on Demand

The marriage of fax and voice-recognition technologies has spawned a service that developers describe as unattended fax retrieval. It works like this: Customers call a *VoiceFax*-equipped computer, listen to a computer-generated message, and type in a product code number and their fax number using a phone touchpad, and the desired document is automatically faxed to them—all without a human operator's assistance.

VoiceFax is for you if you're a professional information broker or in any business seeking a more cost-effective means of dispensing data to customers, prospective customers, or even off-site employees. *VoiceFax* lets a caller select from up to 500 different text and graphic documents using a three-digit PIN that is provided beforehand.

Your documents can be created with desktop publishing software and have multiple fonts and complex graphics. *VoiceFax* can import and export ASCII, Paradox, DBF, and WKS file formats.

VoiceFax lets you customize all aspects of the system, from caller access levels to voice messages. You can limit the number of calls or documents available to each caller per day or confine incoming calls to a particular area code. You can restrict public access to generic product information, while permitting off-site sales staff to receive sensitive corporate faxes. You can change your on-line messages using the telephone handset as a microphone, and any feature of the system can be modified without using programming or scripting languages.

VoiceFax monitors and records all on-line usage, providing valuable demographic data. You can create reports on the number of daily fax transmissions, client account data, and present system configuration.

VoiceFax isn't cheap, and it requires a 386 or 486 with 4MB RAM, an 80MB hard disk, VGA graphics, a voice-recognition board, a fax board, and two dedicated phone lines. A bundle of the voice software, a run-time version of *Paradox* data manager for managing your fax documents, a ToneTalker TT-100 voice-recognition board from BCB Electronic Sales, and a GammaFax fax board from GammaLink sell for $5895. Full turnkey systems start at $8995 for a 386/25-based PC with *VoiceFax*, the *Paradox* run-time version, and ToneTalker TT-100 and GammaFax boards.

VoiceFax supports multiple fax boards for multiple transmissions but is limited to a single incoming voice line, leaving many customers with an "all lines busy" recording. The firm is developing a version for multiple voice lines. —*Art Wilcox*

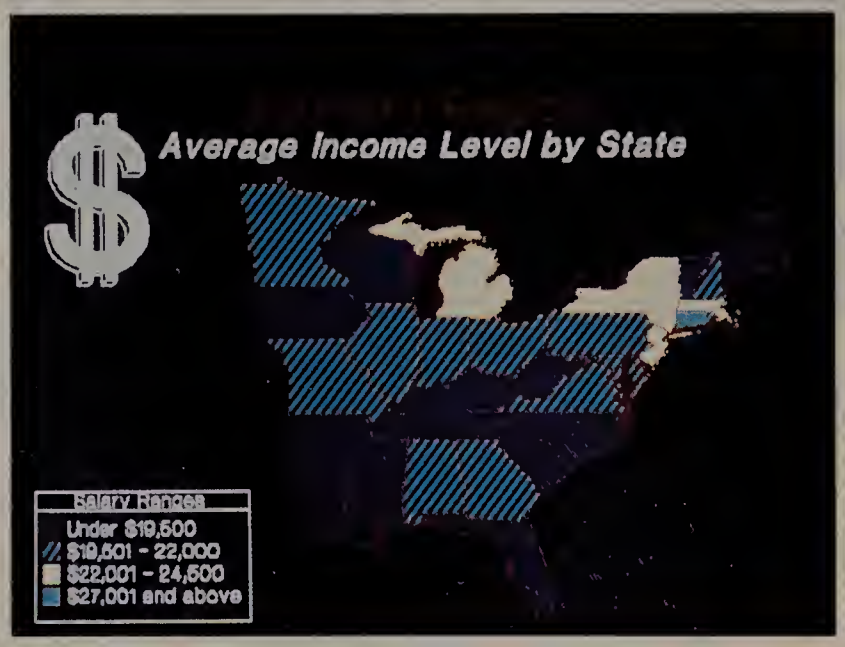
IN BRIEF

VoiceFax
VoiceFax lets your customers or off-site personnel select documents and fax them to themselves, without assistance from a human operator.

VoiceFax Inc.
1675 W. 8th Ave. #106
Vancouver, B.C.
Canada V6J 1V2
604/732-9771,
604/732-3007 (fax),
604/222-8444 (VoiceFax demo line)
Reader service no. 648

Harvard GeoGraphics

Charting a Path to the Mainstream



Harvard GeoGraphics maps present your data graphically using a variety of colors, fills, symbols, titles, and legends.

Harvard GeoGraphics brings mapping software out of the chart room and onto the business desktop. This $395 charting stand-alone, which is compatible with Software Publishing's popular *Harvard Graphics*, lets you support your presentations with customized world, U.S., state, and county maps and even more detailed maps of aggregate three-digit ZIP code sections.

Harvard GeoGraphics contains a data base of over 60,000 U.S. and 3000 international cities. But you can import and map your own data via WK1, WKS, ASCII, and delimited ASCII files. Data and graphics are automatically linked—if data changes, the associated map changes.

You can customize maps with variable fills, text callouts, city icons, and images from the symbol library in a variety of colors. You also can rotate and position symbols and text and size the maps.

Printouts can be in landscape or portrait mode on letter-, legal-, or A4-sized pages, and you can export map files in *Harvard Graphics*' CHT and SYM formats, and in CGM, EPS, HPGL, and PCX.

• You can shell out to other applications without leaving your map in *Harvard GeoGraphics*, and speed keys help you streamline routine tasks.

You'll need DOS 2.1 or later, 640K of RAM, a CGA or better graphics adapter (for color), and a hard disk. Current users of *Harvard Graphics U.S. MapMaker* can upgrade for $95. —*Rex Farrance*

IN BRIEF

Harvard GeoGraphics
Predrawn maps and a large geographic data base help you make an impact with your business presentations.

Software Publishing Corp.
1901 Landings Dr.
Mountain View, CA
94043
415/962-8910
Reader service no. 640

PC MAGAZINE

EDITOR'S CHOICE

"There is very little more you can ask for from a computer."

— *PC Magazine*
January 15, 1991

But ask anyway!

How about:

✔ Editor's Choice ✔ 33MHz '386 ✔ 128K SRAM Cache ✔ Up to 32MB Motherboard Memory ✔ Eight Bay Vertical Case ✔ 250 Watt Power Supply ✔ Twin Cooling Fans ✔ DOS 4.01 & Windows & Mouse ✔ FCC Class B ✔ 24 Hour a Day Toll Free Sales and Technical Support

"The combination is as close to unbeatable as you can get."

— *PC Magazine*

Take it from the experts. ZEOS builds the best '386 systems! "Quality comparable with IBM or Compaq... Excellent Value... Blows away every other computer... ZEOS is top drawer... Unbeatable... Top Honors... A smart choice!" The industry experts love ZEOS systems. And you will too. Why?

Because ZEOS really does build the very best '386 systems you can buy. In naming the ZEOS '386-33 *Editor's Choice, PC Magazine* said ZEOS shows "that you needn't be among the most expensive to be the best." But what does that mean to you?

It means that when you purchase your new ZEOS '386 you will receive more Performance, superior Quality, and better Support than you can get anywhere else. Take performance for instance.

Sim
the F

CACHE MEMORY MEANS PERFORMANCE!

That's why each and every ZEOS '386DX system has a minimum of 64K SRAM Cache standard; *our 33MHz screamers come standard with a 128K Cache.* Having an on-board memory cache is important in realizing the full potential of any '386 processor. That's why only low end '386DX systems are sold without a Cache. That's why ZEOS gives you a Cache, and all the extra performance that comes with it!

And it's not only the Cache that's fast, so is everything else. In choosing the ZEOS '386-33 as *Editor's Choice, PC Magazine* noted "ZEOS International designed this machine for speed—and came up with a system that topped four of our benchmark tests and excelled on the remaining ones." Designed for speed. Absolutely.

Speaking of speed. Standard in your new ZEOS '386 will be one of our *incredibly fast* 85MB or 130MB IDE hard drives. These babies were designed for the '386 and they come packing all the speed you'll need. Like *PC Magazine* said, ZEOS designs for speed. And for Quality Too.

ZEOS QUALITY. SECOND TO NONE.

When you buy your new ZEOS system you are buying *absolute Quality.* As an example, every ZEOS '386DX system comes with a 250 Watt power supply. They cost more, they're better too. Much Better. We invest more in our power supplies to help assure you years of trouble free operation. Even the small details can make the difference.

Like our floppy drives. We use only genuine Teac.® They are the best money can buy. The same is true of *all* the components of your system. Only *the very best* are used. Everything is top notch. Top quality. Top Value.

You'll especially like the value you find in our money saving ZEOS system packages. And when you opt for any package with 4 Megs of memory, we also include the new version of Microsoft®

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Windows and a mouse, plus Microsoft DOS 4.01. All at no additional charge. A rip-roaring Cache, extra Memory and Windows 3.0. What more could there be? From ZEOS, lots more.

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If you should need assistance, you want your computer company to be there no matter what the hour. That's why ZEOS invented *24 Hour a Day Sales and Technical Support.* We did it for you. And it's the best in the business. As a ZEOS customer, you are supported around the clock, *any time of the day or night.* With ZEOS you can have complete confidence in support, in your system and in the company.

Because at ZEOS, we not only build our own systems, we design them from the ground up too. Unlike most of the others, ZEOS maintains its own chip level Research and Development Labs plus our own board level manufacturing facility. All right here in St. Paul, Minnesota, USA.

You can buy with confidence too because ZEOS is a strong and rapidly growing public company (NASDAQ Symbol: ZEOS). As a matter of fact, according to *INC. Magazine*, ZEOS is America's 19th fastest growing public company! And, our professional Systems Consultants and expert Technical Support staff serve tens of thousands of customers World Wide, Twenty Four Hours a Day.

Performance. Quality. Price and Support. And all of it backed by the ZEOS Customer Satisfaction Package which includes our 30 Day Absolute Satisfaction Money Back Guarantee, One Full Year Limited Warranty and our Express Parts Replacement Policy. You're going to be very satisfied. We don't just say it. *We Guarantee it!*

ORDER YOUR NEW ZEOS '386 TODAY!

As *PC Magazine* recently said "It's difficult to be more eloquent about the ZEOS '386-33 than it already is about itself." They went on to say ZEOS shows "you needn't be among the most expensive to be the best." We couldn't have said it better ourselves.

Why not pick up the phone and give us a call right now. Your own expert Systems Consultant is waiting here now to help you tailor your new ZEOS '386 to your specific needs. Buying your ZEOS '386 is perhaps the best purchase decision you'll ever make! After all, your satisfaction is absolutely *Guaranteed.*

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DON'T FORGET THE OPTIONS!

As *PC Magazine* said, ZEOS offers "more options than even the most configuration hungry hound could possibly need." Because every ZEOS system is custom built you may choose from a huge selection of hard drives, video packages and many other options. On-site service is available too. Call 800-423-5891 for details.

All prices and specifications subject to change without notice. Please call to confirm pricing, specification and warranty
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USA. ZEOS is a publicly traded company, NASDAQ symbol: ZEOS. DX8P-B

ZEOS '386 SYSTEMS— A FEW EXPERT OPINIONS:

***PC Magazine*, "Out of 104 machines from 58 companies... For Overall Excellence we selected ZEOS International..."**

***InfoWorld*, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent. Value: Excellent."**

***Government Computer News*, "Arguably the fastest MS-DOS and OS/2 micro in the world."**

***PC Resource*, "ZEOS ...provides quality comparable with IBM or Compaq and does so for about 70% of the price."**

***PC Magazine, Editor's Choice*, "The ZEOS blows away every other computer... a smart choice."**

ZEOS '386 SYSTEMS. A SMART CHOICE INDEED!

Get Started Fast and Easy! ZEOS '386-25 Desktop. 64K Cache, 85MB IDE drive, 1MB Memory.

ONLY $2295

This is the place where high performance begins. Your own ZEOS 25MHz '386 caching system. $2295. Incredible!

- Ultra High Speed 64K SRAM Cache, providing Zero-Wait State performance vastly superior to page/interleave memory schemes.
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- 30 Day Absolute Satisfaction Money Back Guarantee and ZEOS Customer Satisfaction Package.
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Upgrade from 85MB to 130MB for only $225 or go up to 200MB for only $495. Packages with our 130MB standard go to 200MB for only $270!

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ZEOS '386-25 Desktop! 130MB IDE Drive, 4MB Memory, 1024 VGA Color, Windows & More.

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ZEOS '386 33MHz Vertical system. Perhaps the fastest in the world! 130MB IDE, 4MB Memory, 128K Cache, VGA Color & Options Galore.

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ZEOS '386 Systems.

Five ~~Four~~ Times Editor's Choice

"Deserving of this award is the ZEOS 386-33 with its superior combination of performance, expandability, and price."

— *PC Magazine, On Why the ZEOS 386-33 Wins Editor's Choice.*

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"The combination is as close to unbeatable as you can get."

— *PC Magazine*

ZEOS IS THE LEADER

10 Good Reasons To Buy From ZEOS®

24 HOURS!
ZEOS is Open
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365 Days a Year!
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Reason #1
"Overall Excellence."

As *PC Magazine* said "Price is always a consideration. So are benchmark test results. But both factors can be deceiving, which is why we consider them in the context of other aspects that will make the difference months and years down the road."

These are the attributes which *PC Magazine* used in awarding ZEOS the coveted Editor's Choice, not once but five times. And "Overall Excellence" are the very words *PC Magazine* used in describing ZEOS systems comparing them to all others.

Reason #2
Dazzling Performance.

In one recent '386 review, *PC Magazine* awarded ZEOS Editor's Choice. "The ZEOS '386 blows away every other computer... a smart choice" is what they said. And in another recent review, *Government Computer News* said the ZEOS 33MHz '386 is "arguably the fastest MS-DOS and OS/2 micro in the world."

Dazzling Performance is built into every ZEOS system. It's a key component of ZEOS Overall Excellence.

Reason #3
Exceptional Quality.

PC Resource Magazine put it this way, "ZEOS... provides quality comparable with IBM or Compaq and does so for about 70% of the price." ZEOS uses only the very best components. And every system is fully tested and burned-in right in our own labs.

Reason #4
Value.

InfoWorld says, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent. Value: Excellent." *Personal Computing* said, "ZEOS... is the best value we've come across... its performance is right up there with the slickest, most expensive PCs you can buy."

Reason #5
Warranties and Guarantees.

ZEOS believes in its products. That's why we offer each and every customer our 30 Day Absolute Satisfaction Money Back Guarantee, no questions asked. Plus, our One Full Year Limited Warranty and Express Parts Replacement Policy. Optional On Site Service is available too. Call for details.

Reason #6
24 Hour Toll Free Technical and Sales Support.

At ZEOS, the customer is #1. That's why we invented 24 Hour a Day Tech Support. For *your* convenience. If you buy a product from us we feel we should be there to help, any time of the day or night. Give us a call Toll Free! 800-423-5891. Anytime!

Reason #7
Experience.

Almost unique in the mail order computer industry, ZEOS maintains its own chip level Research and Development staff. In addition to Systems Manufacturing, we also operate our own Board Level Manufacturing facility.

ZEOS has been involved in Research and Development since our incorporation back in 1981. Our strong and experienced Research, Manufacturing and Technical Staff translates into superior factory direct computer systems for you.

Reason #8
A Sterling Reputation.

In magazine after magazine and review after review ZEOS systems are cited for Overall Excellence, for Excellent Value, as the Right Choice and so on. All of this is flattering but the most important thing is this: What do our customers think? Frankly, they love us. The systems and the support. That means more to us than anything.

Reason #9
Easy to Buy.

ZEOS systems are easy to buy. You can pick up the phone any time of the day or night and order your new ZEOS computer. And we accept MasterCard, Visa, Discover, American Express, and Corporate Purchase Orders from Fortune 1000 Companies, Colleges, Universities and Governments. Complete Leasing Programs are available as well.

And now the Z•CARD! It's your very own ZEOS Credit Card and you can apply today. With the Z•CARD you can charge your ZEOS purchases and pay in easy monthly installments. It's just like a Bank Card. Why not apply for your Z•CARD now!

Reason #10
You're Going to be Very Satisfied.

When it comes right down to it, you're going to be very satisfied with your new ZEOS system. Our goal is your complete satisfaction. And that's our commitment to you. To quality. To performance. To reliability and support. To *Value.* We don't just say it, *we Guarantee it!*

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UPDATE

New Versions of Your Favorite Products

XtreeGold 2.0

Version 2.0 of the XtreeGold DOS shell includes new pulldown menus and file viewers in numerous formats.

Version 2.0 of the *XtreeGold* DOS shell includes new pulldown menus and file viewers in many more formats. You can print or copy text from a file that you're viewing, although you can't launch the application from the file that created it as you can with *Norton Commander*. Other additions include an auto-install feature that searches your hard disk and automatically adds applications to your menus and the ability to undelete lost files, compare subdirectories, and move files between drives. *XtreeGold 2.0* retails for $149; upgrades are $35. Xtree Co., 4330 Santa Fe Rd., San Luis Obispo, CA 93401; 800/388-3949, 805/541-8053 (fax).

Reader service no. 652

Who-What-When Enterprise

Who-What-When Enterprise brings the personal and resource management capabilities of the single-user product to any DOS 3.1–compatible network, including Novell NetWare. With it, you can link work-group members' personal calendars, card files, phone lists, memos, and group resource and project schedules in real time. The six-station server pack is $695; each additional five-station pack is $495, and a 20-station pack is $1495. Chronos Software, 555 De Haro St. #240, San Francisco, CA 94107; 800/777-7907, 415/626-5393 (fax).

Reader service no. 651

QMS-PS 810, 820, 2210, 2220

QMS has extended the automatic emulation switching of its QMS-PS 410 personal printer to its QMS-PS 810, 820, 2210, and 2220 lasers. The bundled TSR software will automatically recognize and adjust between Adobe PostScript print jobs and those in any one of the other standard emulations offered with these printers—among them, PCL 4, HPGL, Diablo, and Epson. You select emulations through a pop-up DOS window that takes less than 10K of conventional memory. QMS, Inc., One Magnum Pass, Mobile, AL 86689-1250; 800/631-2692, 205/633-4866 (fax).

Reader service no. 653

Generic CADD 5.0

Generic Software has released five symbol libraries for use with its *Generic CADD Starter Kit* and *Generic CADD 5.0*. In addition to common business icons, the new libraries include hundreds of predrawn symbols for use in the design of office interiors, printed circuit boards, local area networks, and maps. The first two libraries are $99.95 each; the others are $49.95 each. Generic Software, Inc., 11911 N. Creek Pkwy. S, Bothell, WA 98011; 800/228-3601, 206/483-6969 (fax).

Reader service no. 654

Norton Backup 1.2

The new version of *Norton Backup* lets PC managers implement preset backup procedures for an entire office or company and offers more kinds of network and multiple-drive support. Users can pick from several companywide, preset routines such as daily backup of all files or incremental backups, depending on, say, time available. Symantec maintains that version 1.2 of *Norton Backup* is 30 percent faster than its predecessor. Upgrades for the $149 program can be purchased for $10. Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014-2132; 800/441-7234, 408/253-9600.

Reader service no. 650

Artemis Planner 2.0

Enhanced interactive drawing capabilities in version 2.0 of *Artemis Planner* let managers do preliminary project planning most efficiently. For example, you can now create logic links between the bars on your Gantt charts just by clicking and moving them. You can move whole blocks of tasks to see the effect of a new sequence. Upgrades to the $895 package are $175. Metier Management Systems, 12701 Fair Lakes Cir. #350, Fairfax, VA 22033; 800/477-6648, 703/222-8203 (fax).

Reader service no. 656

Great Plains Accounting Series 5.35

Great Plains Accounting Series 5.35 lets you choose whether to post transactions on a module-by-module basis or simultaneously across all modules. With the former, you can continue to enter data into unaffected modules while a module posts; only the tables of affected files are locked. Module prices range from $495 to $995. Great Plains Software, 1701 S.W. 38th St., Fargo, ND 58103; 800/456-0025, 701/281-3171 (fax).

Reader service no. 655

For more information about any product, contact the manufacturer or circle the number on the reader service card.

Before You B
Lotus 1-2-3, E
Or Quattro P
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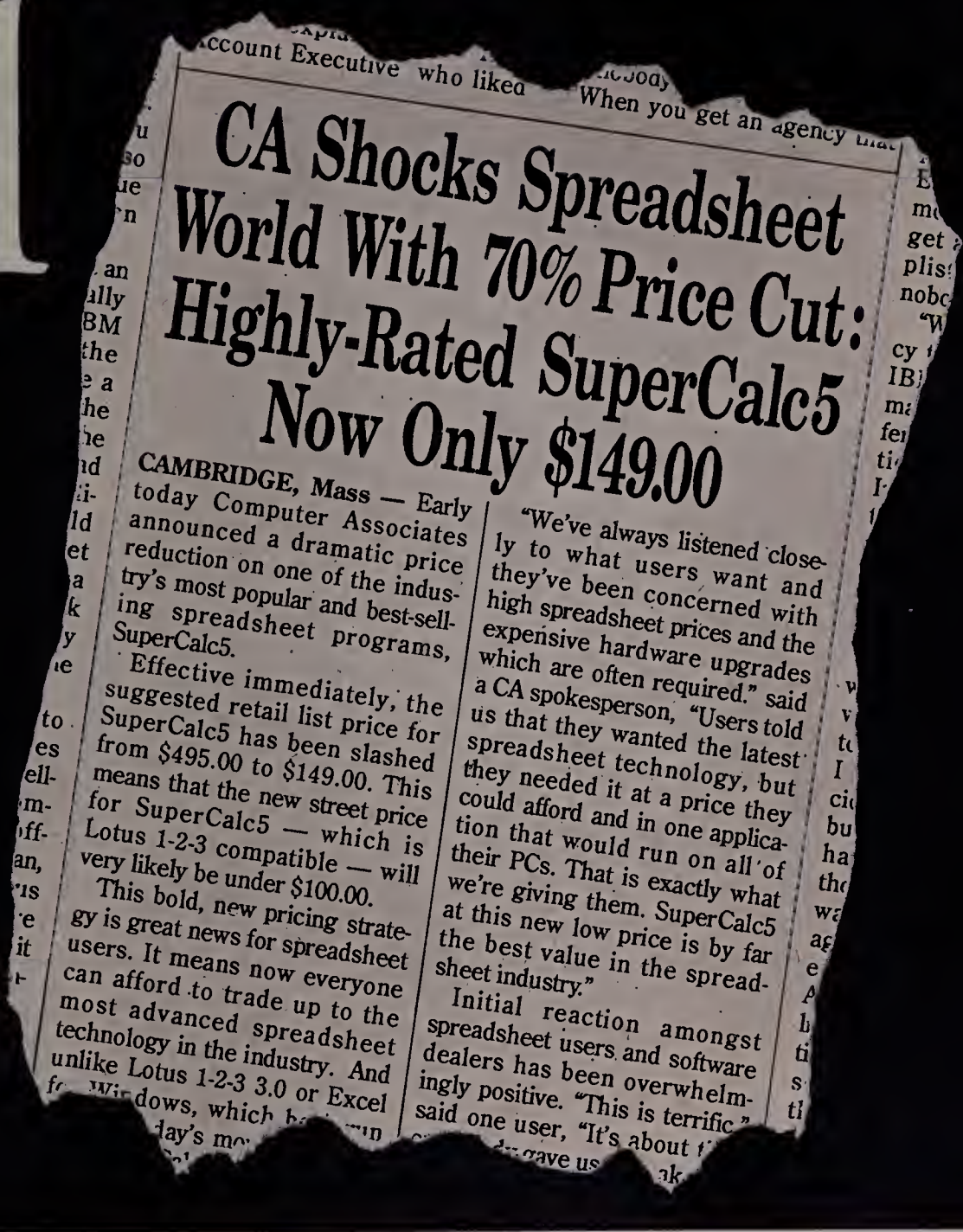


Account Executive who liked ... When you get an agency that

CA Shocks Spreadsheet World With 70% Price Cut: Highly-Rated SuperCalc5 Now Only $149.00

CAMBRIDGE, Mass — Early today Computer Associates announced a dramatic price reduction on one of the industry's most popular and best-selling spreadsheet programs, SuperCalc5.

Effective immediately, the suggested retail list price for SuperCalc5 has been slashed from $495.00 to $149.00. This means that the new street price for SuperCalc5 — which is Lotus 1-2-3 compatible — will very likely be under $100.00.

This bold, new pricing strategy is great news for spreadsheet users. It means now everyone can afford to trade up to the most advanced spreadsheet technology in the industry. And unlike Lotus 1-2-3 3.0 or Excel for Windows, which ...

"We've always listened closely to what users want and they've been concerned with high spreadsheet prices and the expensive hardware upgrades which are often required." said a CA spokesperson, "Users told us that they wanted the latest spreadsheet technology, but they needed it at a price they could afford and in one application that would run on all of their PCs. That is exactly what we're giving them. SuperCalc5 at this new low price is by far the best value in the spreadsheet industry."

Initial reaction amongst spreadsheet users and software dealers has been overwhelmingly positive. "This is terrific," said one user, "It's about ... gave us ...

It's the beginning of a revolution.

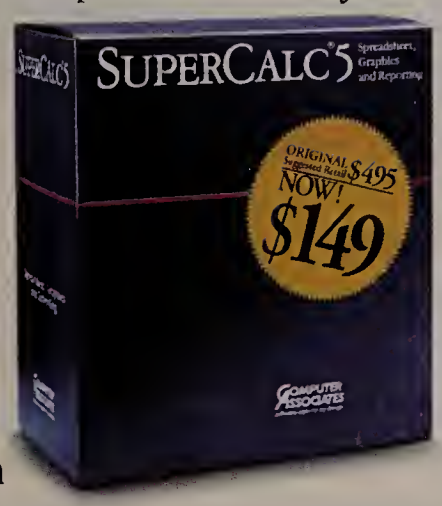
The affordable spreadsheet revolution. Now every user in America can afford the most advanced spreadsheet technology. The latest breakthroughs. Newest features. Hottest 3-D graphics.

CA90s

CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.

It's all there inside SuperCalc5. With Lotus 1-2-3 compatibility, presentation quality graphics and spreadsheet linking, SuperCalc5 has become one of the most popular, best-selling spreadsheets in the industry.

More than 3,000,000 copies have been sold and unlike some others, SuperCalc5 runs on virtually every type of PC that exists.



If you've been thinking about moving up to a more powerful, full-featured spreadsheet, now's the time.

Move up to SuperCalc5 and get everything you've always wanted for hundreds of dollars less than Lotus 1-2-3, Excel or Quattro Pro. For the name of your nearest SuperCalc5 dealer call 1-800-CALC-149.

Do it right now. After all, at this price, why wait?

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Software superior by design.

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Circle 42 on reader service card

33-MHz 386s: Survival of the Fastest

When demanding future applications arrive, will you be ready? Buy one of the nine 33-MHz 386s reviewed here, and enjoy power for today and tomorrow at a practical price.

Scott Spanbauer

COVER STORY

Remember when the 33-MHz 386 was cutting-edge technology? That isn't so anymore, which is good news for the price conscious. On average, a 386/33 costs a full $1800 less than an equivalent 25-MHz 486 ($1200 less if you buy the 386 with a math coprocessor). True, 486/25s are nearly 44 percent faster than 386/33s in CPU-intensive tests, but they're only slightly faster at disk-intensive chores. With power enough to take you well into the nineties, 386/33s are the best bargains in high-end computing.

Many buyers shopping for a file server assume they need a 486, but at today's prices, a 486 is a waste of money. File server performance depends more on the hard disk and the amount and speed of the RAM than on the CPU, and that makes the 386/33 a wiser purchase.

A 386/33 can also make a good workstation, but it's not for everyone. Some users are probably better off buying a 20-MHz 386SX for about half the cost. Because it's a 386, an SX will still run *Windows* reasonably well if you don't do a lot of multitasking or run high-end graphics programs. If you do, the SX's pace will be leisurely, making a full-blooded 386 a better choice.

Putting Technology in Its Place

We scrutinized nine 33-MHz 386s for your shopping pleasure, everything from small-footprint desktop computers to full-strength floor-standing towers. Our standard system configuration included 4MB of RAM, a 100MB to 150MB hard disk, VGA graphics, a color monitor, a mouse, and the latest available version of DOS. For network testing, we installed the manufacturer's 300MB (or next larger capacity) hard disk. To obtain realistic prices, we polled more than 100 retailers in eight major cities nationwide to find the street prices of systems equipped in our configuration.

As the PC World Test Report reveals, performance scores varied considerably. Before you buy a system, make sure it performs well in your applications—it may be lightning fast in one application but agonizingly slow in another. The *Windows* test is a key gauge of desktop performance, the NetWare test of server performance.

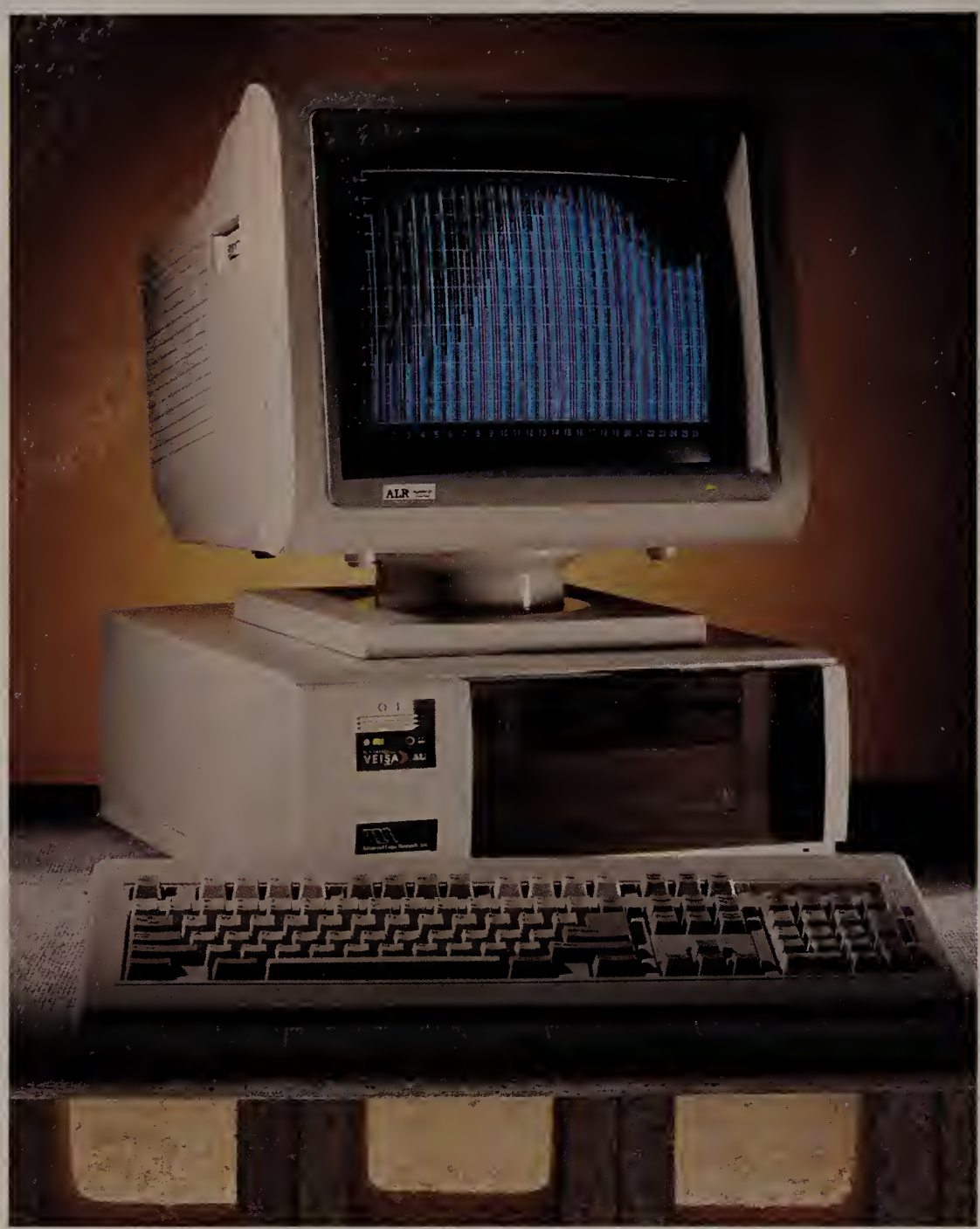
Expandability is key to long-term usefulness, especially in a server. Having plenty of drive bays and expansion slots will ensure that you can give your PC infusions of life-extending technology over the years. Five of the reviewed systems offer an EISA (Extended Industry Standard Architecture) bus, which promises higher throughput and backward compatibility with standard AT-style boards. But the jury's still out on EISA: Few add-on boards exploiting it have arrived, and on the whole, the AT-style systems tested here performed just as well as the EISA systems.

Is it a server or just a supersonic desktop? These two Best Buys can play both roles, but the speedy Arche Legacy 386-33 is better at desktop duty, while the expandable AST Premium 386/33TE is the top server.

ROBERT CARDIN

Besides speed, RAM capacity is the other advantage that the standard 80386 chip has over the less expensive SX. Yet many of the systems reviewed here support only 16MB of CPU-speed RAM—the SX's limit. For a workstation, 16MB, which is OS/2's and *Windows'* current capacity, will be sufficient for many years to come. But that's not true for a server, where more buffers and a larger cache translate into performance gains. Novell's NetWare 386 can take advantage of up to 4 gigabytes today, and you can expect other network operating systems to follow suit.

Currently, memory beyond 16MB is probably useful only if your server commands a large, busy NetWare 386 LAN, and it's probably not cost-efficient even then. But



Is ALR kidding? Only $3796 for a 33-MHz 386? No joke—that's the price for a fully equipped unit, including built-in EISA graphics. It may be the desktop bargain of the roundup, but fairly limited expandability and shaky technical support make it a no-go as a file server.

ROBERT CARDIN

as the demand on your network grows, you'll be tempted to buy more RAM. And as memory gets cheaper, you'll be glad to have someplace to put it. (See the sidebar "Buying Smart" for more details on buying criteria.)

So what's the verdict? Two systems, both reasonably priced, win *PC World* Best Buy honors in a virtual tie. The blazing Arche Legacy 386-33 is your best choice as a small server or a high-end workstation, while the ever-expandable AST Premium 386/33TE can handle any network you're likely to throw its way. With either of these systems, power computing can be within your means.

ALR BusinessVEISA 386/33

PROS: Rock-bottom price, high fast-RAM capacity, upgradable CPU

CONS: Poor service and support; no room for full-height drive; obstructed slots

At first glance, ALR's BusinessVEISA 386/33 looks darn near invincible. Its performance is quite good (it came in first in our NetWare test and second in the *Paradox* test), and its $3796 street price is by far the lowest in the roundup. If not for ALR's below-average service and support, the system might have won a Best Buy. Still, the BusinessVEISA is a good choice for individuals or as a server for a small LAN.

As you'd expect in a small-footprint desktop, the VEISA's chassis is fairly cramped inside. You can install two third-height and two half-height drives, but this is the only system reviewed that lacks room for a full-height drive. For the time being, that limits you to about 300MB of storage.

Thanks to its CPU-on-a-board design, you can swap the 33-MHz 386 for a 25- or 33-MHz 486. The VEISA has a full six open slots, three of them EISA, but because its CPU board gets in the way, one of the 16-bit slots can take only a half-length board. If you install more than 17MB of RAM, you'll obstruct the other 16-bit slot. Aside from that, the VEISA's chassis and front panel are well laid out and easy to work on.

ALR's support services aren't as well designed: Phone support ends at 5 on weekdays, with no free weekend hours and no toll-free number. Our experiences in calling ALR's technical support were much the same as they've been in the past; we once got through to a technician after a 10-minute wait, but the other times we had to wait for a call back. We once waited until the next day. ALR provides no on-site service, but several of the ALR dealers we talked with offer it at an additional cost, and one provided it free for one year.

Despite its fast NetWare scores, ALR's BusinessVEISA 386/33 is too cramped to serve large networks, and the technical support may deter others. But an unbeatable price makes it a good deal for bargain hunters.

Arche Legacy 386-33

PROS: Fastest in the roundup, two-year warranty

CONS: Flimsy case, additional RAM cards eat up slots

Arche's Legacy 386-33 turned in a blistering performance, particularly under *dBASE IV* and NetWare, beating all comers overall. Combine that with

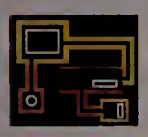
BUYING SMART

A 33-MHz 386 is a smart buy for a high-performance workstation or a network server. The key issues are speed, expandability, and fast-RAM capacity, followed by design, service, and pricing.

PERFORMANCE

The speeds of your processor, hard disk, RAM, and video controller all affect performance, but to different degrees, depending on the nature of the job at hand.

Poor video throughput will slow down *Windows* performance but won't affect a file server, and while a sluggish hard disk slows all applications, it doesn't affect *1-2-3* as much as it does *dBASE*. When examining our test results, keep your applications in mind.



EXPANDABILITY

A computer should be able to grow with your needs. Plenty of expansion slots and drive bays will let you continue to enhance your system.

All the systems reviewed here have enough drive bays to make a good workstation. If your system has three front-loading bays for two floppy drives and a tape drive, plus one internal hard disk bay (even if it's only 3½ inches), it will be sufficient.

But you'll want more than that for a server. A full-height bay gives you the freedom to install one big drive or two small ones. Look for at least one full-height bay in your drive server, as well as three front-loading bays.

Workstations and servers have pretty much the same requirements for expansion card slots. In a server, you'll want various I/O cards. In an individual PC, you may eventually want a network card, an internal modem, a printer controller, a fax board, a mouse card, a scanner board, or some combination of these. Either way, five slots will probably be sufficient, and six is even more reassuring. Note the difference between slots and free slots; any slots that are used for standard controllers, VGA boards, or RAM cards don't count.

But what *kind* of slots should your system have? There are two standards for expansion buses that promise better throughput than the old AT bus: EISA (Extended Industry Standard Architecture), which is compatible with the old bus, and Micro Channel, which isn't. These buses may prove valuable in the future—especially for servers, where bus throughput is a major bottleneck—but they have yet to prove their worth. No Micro Channel models were available for this review.

FAST-RAM CAPACITY

You'll probably buy your new system with 4MB to 8MB of RAM, and that's plenty at the moment. But someday you may want more, and that's when your system's capacity for CPU-speed RAM—memory that bypasses the slower bus—may prove too low. For a personal workstation, 16MB of fast RAM is probably all you'll ever need, but for a file server, you'll want support for at least 32MB.

DESIGN AND CONSTRUCTION

A well-designed, well-built computer will give you fewer headaches in the years to come. Look for a chassis that gives you easy access to connectors, peripherals, and internal switches—or, preferably, one that has no internal switches at all.

Unless you're buying a server, ergonomics are also important. Ideally, the on/off control and the reset switch should be placed on the front panel. A sharp color display with a tilt-and-swivel monitor is a must, and a comfortable keyboard is also essential.

Also important is an upgradable CPU. You won't have to worry about your system becoming obsolete as long as you can pop in a 486 card down the line.

SERVICE AND SUPPORT

Chances are you're going to need some kind of assistance with your computer. Look for prompt, toll-free telephone support during the hours most convenient to you and free on-site service during the warranty period. For systems with direct manufacturer support, we called at three different times of the day to check on the availability (but not the quality) of help.

As with any high-tech gadget, your 386/33 should come with a one-year warranty, minimum. If you run a small business, you'll find optional extended warranties that include free on-site service can be a wise investment. Such policies should be available for around $200 a year. —*S. S.*

FEATURES EVALUATION

Expandability Is the Key to a Winning Server

If you need a network server, you'll want a 33-MHz 386 with plenty of slots and drive bays and support for lots of CPU-speed RAM. The Arche Legacy 386-33 and the AST Premium 386/33TE—both Best Buys—provide room to grow.

● Yes
○ No
n/a = not applicable

	ALR BusinessVEISA 386/33	Arche Legacy 386-33	AST Premium 386/33TE	AT&T 6386E/33 WGS	Compaq Deskpro 386/33L	Dell System 333D	NEC PowerMate 386/33E	Tandy 4033 LX	Zenith Data Systems Z-386/33E
Standard features									
Street price[1]	$3796[2]	$5612[3,4]	$6218[5]	$10,743[6]	$8092[7]	$4659	$5108[8]	$7072[9]	$6728
List price[1]	$6571[2]	$5960[3]	$11,739[5]	$11,248[6]	$10,943[7]	$4659	$9170[8]	$7247[9]	$11,298
Weitek 3167 coprocessor support	●	●	●	○	●	●	●	●	●
Memory cache	●	●	●	●	●	●	●	●	●
Built into motherboard									
Parallel port	●	●[10]	●	●	●	●	●	●	○[10]
Serial port	1	1[10]	2	2	2	2	2	1	○[11]
Floppy disk controller	●	●[12]	●	●	●	●	●	●	●
Hard disk connector	●	●	●	○	●[13]	●	○	●	●
Mouse port	●	●	●	●	●	●	●	●	○
VGA	○	●	●	○	●	●	○	○	○
800 by 600 super VGA	○	●	●	○	○	●	○	○	○
1024 by 768 super VGA	○	●	●	○	○	●	○	○	○
Fast RAM									
Capacity	49MB	32MB	80MB	40MB	100MB	16MB	16MB	16MB	20MB
Expandability									
8/16/32-bit EISA slots/number free	3/3	0/0	10/8	0/0	7/7	0/0	5/5	0/0	7/4
8/16-bit slots/number free	2/2[14]	6/4[15]	0/0	7/5	0/0	5/5	2/0	6/5	0/0
8-bit slots/number free	1/1	2/1	0/0	1/1	0/0	1/1	0/0	0/0	0/0
Drive bays[16]	4	5	6	8	7[17]	4	5	4	5
Accepts full-height drive	○	●	●	●	●	●	●	●	●
Largest hard disk option	330MB	380MB	1GB	300MB	420MB[18]	650MB	300MB	440MB	320MB
Optional drive arrays	○	●	●	○	●	○	○	○	○
		BEST BUY	BEST BUY						

good expandability and a reasonable $5612 price (the actual street price should be lower; Arche dropped the list price by $1795 after we completed our price survey), and you have a clear Best Buy.

An unassuming AT box, the Legacy provides five half-height bays, including two internals that can accommodate a full-height drive. You also get five free slots, but if you want more than 8MB of RAM, you'll have to sacrifice one of the two fast-RAM slots, which can also take standard 8/16-bit cards. To bring the Legacy up to its full 32MB capacity, you'll have to give up both of these.

The Legacy receives mixed reviews on design. Its thin sheet-metal chassis hardly inspires confidence, there's no front-panel on/off switch, and installing a coprocessor requires removing the motherboard. On the bright side, the Legacy features a front-panel reset button and an LED display that shows processor speed.

Moreover, the Arche Legacy 386-33's motherboard has more than the usual share of proprietary, application-specific chips. These reduce the component count, increasing the machine's reliability.

Support is top-notch. Arche is the only company in this review that offers a

	ALR BusinessVEISA 386/33	Arche Legacy 386-33	AST Premium 386/33TE	AT&T 6386E/33 WGS	Compaq Deskpro 386/33L	Dell System 333D	NEC PowerMate 386/33E	Tandy 4033 LX	Zenith Data Systems Z-386/33E
Design and construction									
Switchless setup	●	●	●	○	●	●	○	●	●
Compact footprint	●	●	n/a	n/a	○	●	○	○	●
Tilt-and-swivel monitor	●	●	●	●	●	●	●	○	●
Front-panel on/off switch	●	●	●	●	●	●	●	●	○
Front-panel reset button	○	●	●	●	○	●	○	●	○
Upgradable CPU	●	●	●	○	●	○	○	●	○
Service and support									
Warranty period (years)	1	2	1	1	1	1	1	1	1[19]
Free on-site service	○[20]	●[21]	●[22]	○[23]	○[22]	●	○[22]	○	●[24]
Toll-free support number	○	●	●	●	○[22]	●	○	○	○[22]
Daily support (hours)	9	10	11	24	○[22]	15	12	9	○[22]
Weekend support	○[20]	●	●[25]	●	○[22]	●[26]	○[22]	○	○[22]
Electronic BBS	●	●	●	○	○	●	●	●	●
		BEST BUY	BEST BUY						

[1] Except as noted, price based on 4MB RAM, 100MB or larger hard disk, 1.2MB (or 1.44MB 3½-inch) floppy drive, VGA and color VGA monitor, at least one parallel and two serial ports or one serial port and one mouse port, 101-key keyboard, mouse, and DOS 3.3 or later version. If the vendor doesn't offer a mouse, we added $99 to the street price and $125 to the list price to represent the cost of a basic Microsoft Mouse.
[2] With 106MB hard disk and 5MB RAM.
[3] With 104MB hard disk.
[4] Price may be lower due to recent list price change.
[5] Includes 330MB SCSI drive.
[6] Includes 135MB hard disk.
[7] Includes 120MB hard disk.
[8] Includes 140MB hard disk.
[9] With 105MB hard disk.
[10] One on standard I/O card.
[11] Two on standard VGA card.
[12] Built into standard ESDI controller card.
[13] 320MB and 650MB drives and all drive arrays use advanced ESDI controller in expansion slot.
[14] One slot can accept only a half-length card.
[15] Including two proprietary memory slots that accept standard 8/16-bit boards if not needed for RAM.
[16] One full-height bay counts as two half-height bays.
[17] Using proprietary drives; five with standard drives.
[18] 420MB drive array pair. 650MB option available using external drive chassis.
[19] Or three months of on-site service.
[20] Optional through Intel.
[21] Optional during first 30 days for $149 for two years.
[22] May be available through dealer. Some variation will be found from one dealer to another.
[23] Via direct sales representatives; various options are available.
[24] 3 months as alternative to 12 months carry-in.
[25] Saturday 7–1.
[26] Saturday 8–4.

two-year warranty; on-site service for that period is available for a low $149. There's no weekend support, but all our toll-free weekday calls were answered immediately.

The Legacy comes with generous support, plenty of drive bays, and incredible speed. If EISA is important, look elsewhere. But otherwise, the Legacy is a Best Buy whether you're looking for a zippy workstation or a fast server.

AST Premium 386/33TE

PROS: Excellent expandability and RAM capacity, low price for tower

CONS: None

AST's tower delivers almost everything a server needs: plenty of expandability and 80MB of fast-RAM capacity. The Premium performed well in our speed tests, if unspectacularly. Although the list price is high, AST systems tend to be deeply discounted, and we found this one going for an average of $6218. It's a great deal as a server, and it's not bad as a workstation, either.

The 386/33TE provides enough elbowroom to take you well into the nineties. In addition to its great fast-RAM capacity, you get eight free EISA slots (more than any of its rivals provide), six

Typically fast and pricey, the state-of-the-art Compaq Deskpro 386/33L exudes fit and finish. Meeting desktop and server needs with equal ease, it delivers the small footprint of a workstation plus one-of-a-kind drive array technology for expanding storage on a server.

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drive bays, and an upgradable CPU. The company even offers a 16MB hard disk option for really big jobs.

Solidly built, the Premium has a notably quiet fan. Technical support is toll-free and available during part of the weekend. There's also an automated phone service that faxes you information on request. Response is fast—only once were we put on hold, and only for a minute.

With its relatively low price and superb expandability, the Premium makes a great server. If you want assurance that your new system will remain up-to-date in the coming years, the Premium 386/33TE is for you.

AT&T 6386E/33 WGS

PROS: Plentiful drive bays and high RAM capacity

CONS: Sky-high price

The best description of this floor-standing monolith from AT&T is "industrial strength." That applies to its overbuilt case and too-high $10,743 street price. Forget the excellent expandability and RAM capacity—the 6386E/33 WGS is just too expensive to compete.

The 6386E/33 has eight drive bays, the most of any system reviewed. The massive chassis has another redeeming quality: Only weight lifters would be able to steal it. The front panel provides a reset button, but the on/off switch is oddly placed near the floor. Worse, configuring RAM, printer, and serial port settings requires searching for and setting countless jumper pins scattered around the system board.

Phone support is good. It's toll-free, and it's open on weekends, but twice we had to hold for several minutes before receiving help.

The 6386E/33's outstanding expandability is not worth the high price. Other systems are almost as expandable, and for ten grand you could buy a terrific 486.

Compaq Deskpro 386/33L

PROS: Excellent expandability and RAM capacity; upgradable CPU

CONS: Expensive

Like ALR, Compaq shoehorns a lot of computer into a fairly small space, but the Deskpro's superior design gives it a far broader range. The 386/33L features a modular processor board, seven free EISA slots, optional drive array technology, and a whopping 100MB capacity for fast RAM. Performance was good, but we didn't see the lightning speeds we've come to expect from Compaq systems. We did see a Compaq price, though—$8092 on the street. Still, the 386/33L is a good value, especially as a large-volume server.

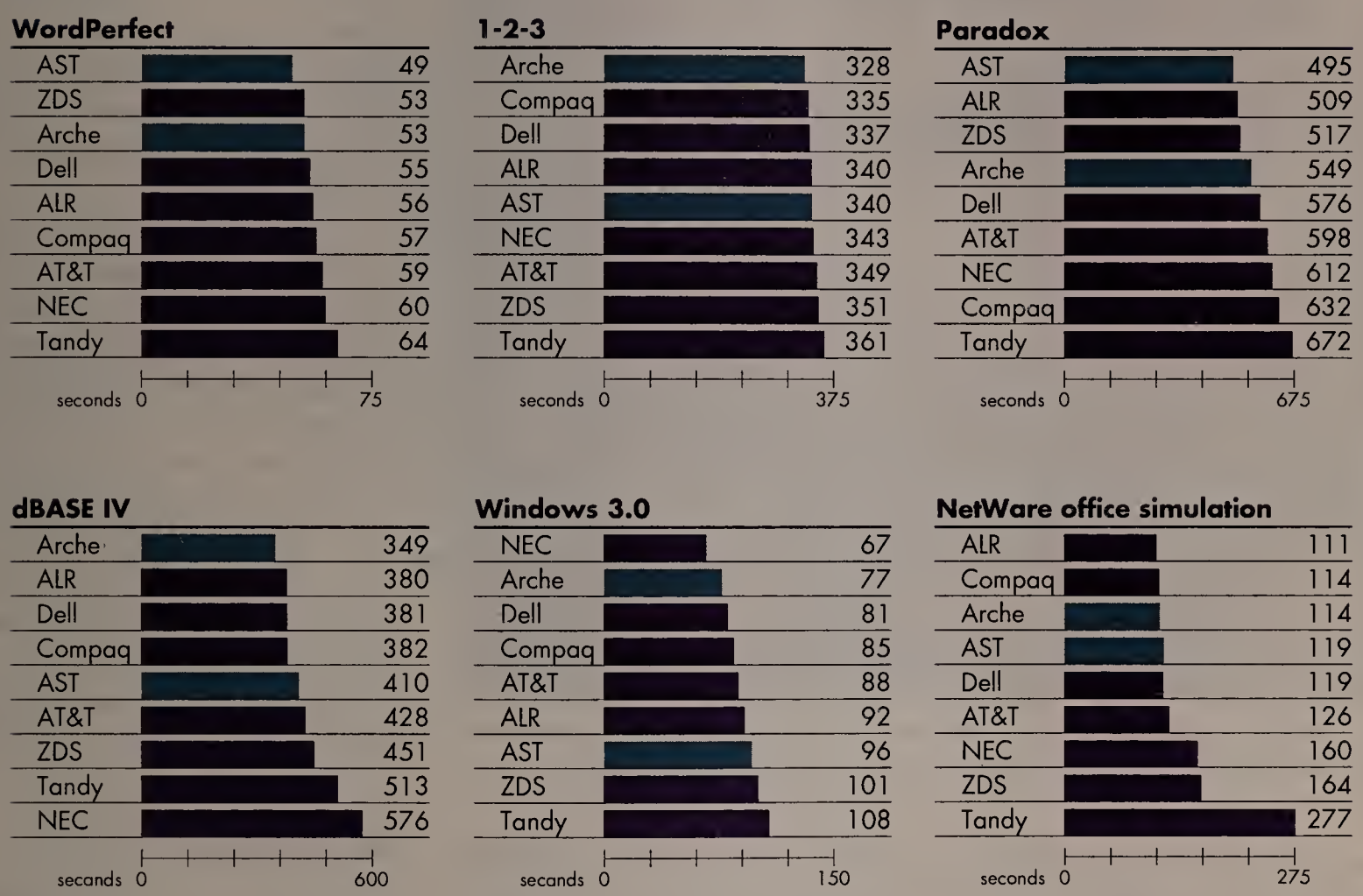
Compaq's unique drive array technology is perfect for serving a large, growing LAN. This extra-cost option lets multiple hard drives act as one, either to speed access or to preserve data integrity. For instance, two 210MB drives can perform as one very fast 420MB drive or as a single 210MB drive that backs itself up as it works. Four such drives can provide up to 840MB of storage, 630MB with data integrity features on. Compaq's drive arrays work only with special hard disks distributed by Compaq.

The 386/33L's high RAM capacity is

Arche's Legacy 386-33 Takes the Lead

Top performance at a winning price helps the Legacy 386-33 earn its Best Buy stripes. Note the system's clear lead in the 1-2-3 and dBASE IV tests. The NEC PowerMate 386/33 runs Windows fastest, thanks to special enhancements.

Best Buy



Methodology
All the computer systems were tested with 4MB RAM in the single-user benchmarks and 8MB RAM in the Novell NetWare office simulation. Every computer was tested with the vendor's version of DOS, and the systems had the following hard disk configurations for the single-user tests: Dell System 333D and Zenith Data Systems Z-386/33E, 100MB; Tandy 4033 LX, 105MB; ALR Business-VEISA 386/33, 106MB; Compaq Deskpro 386/33L, 120MB; AT&T 6386E/33 WGS, 135MB; NEC PowerMate 386/33E, 140MB; Arche Legacy 386-33, 104MB; AST Premium 386/33TE, 330MB. For the office simulation test, each system had the manufacturer's 300MB (or next larger) hard disk.

WordPerfect
The time it takes to reformat three *WordPerfect 5.1* documents that vary in size from 5K to 55K is measured. The files are basic text with some boldface and underlined text; one of the documents includes a TIFF image.

dBASE IV 1.1
With the caching feature enabled, the time required to complete an unindexed search for a single record in a 100,000-record parts table is measured. Then the table is indexed, the transaction processing module is run, and 600 records are posted.

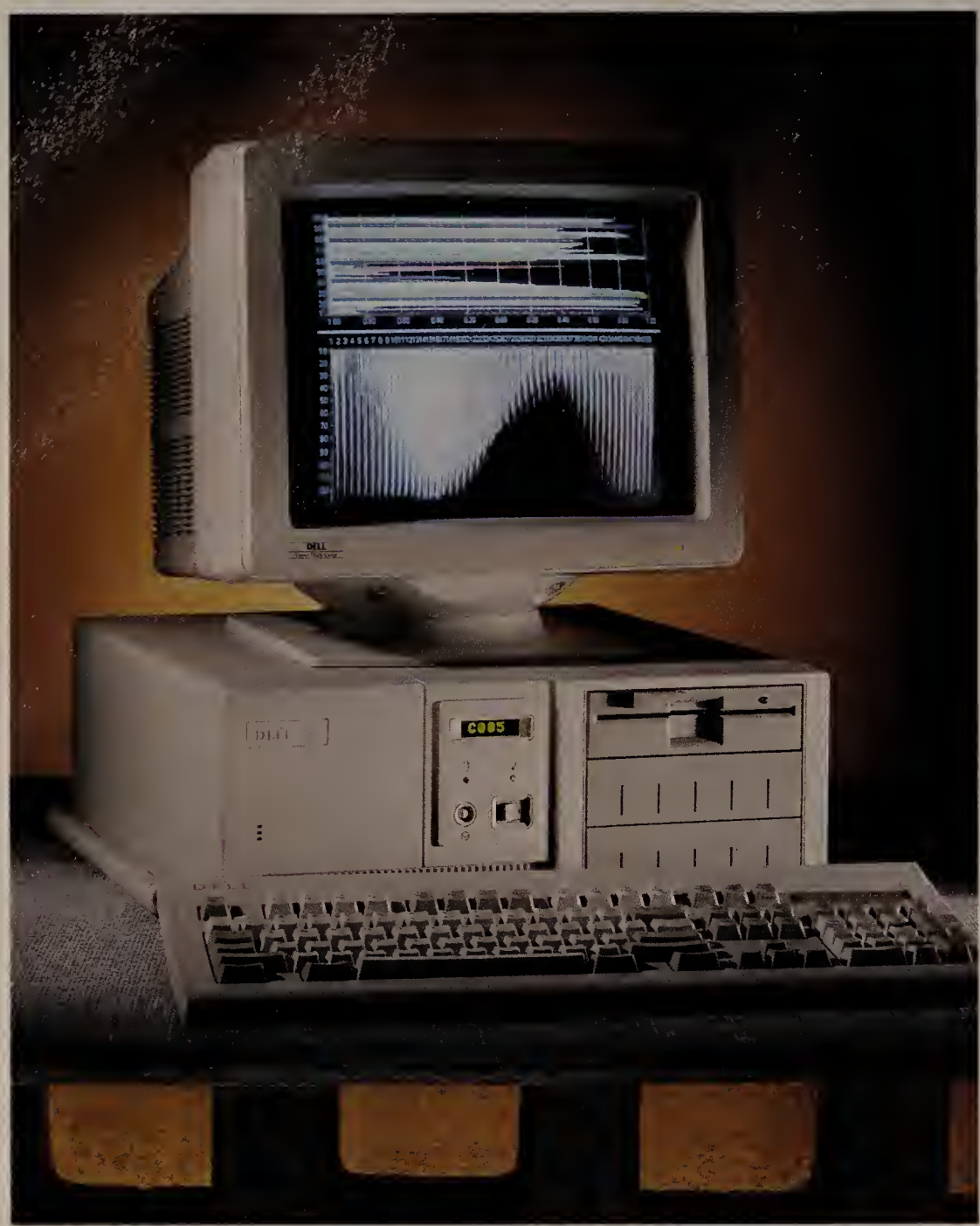
1-2-3
The *1-2-3 2.2* test measures the time required to complete the following operations: The application is loaded. Then three separate worksheets (arithmetic, financial, and scientific) are loaded, and various changes are made and recalcs run on each. Subsequently the *MAPS* add-in from Management Advisory Services is used to run a number of financial forecasts.

Windows 3.0
Timing begins and ends at the DOS prompt. *Windows* is launched, along with a macro that loads both *Excel* and a financial worksheet and initiates a recalc. Then the macro loads Samna's *Ami Professional* and a 50K document, in which is placed a 500K TIFF image. Finally, the macro launches *Micrografx Designer*, opens a drawing, displays it on screen, and exits to DOS.

Paradox
Starting with an orders table, each record is compared with an available stock table where the current prices for items are found, and the resulting records are inserted into an invoice table.

NetWare office simulation
Each of 24 workstations runs one or two of the LAN applications *WordPerfect 5.1*, *1-2-3 2.2*, and *Paradox 3.0*. Typical files in various sizes are loaded, and operations are performed with delays interspersed to simulate normal use, but only operations that access the server's hard disk are measured. Every workstation also occasionally copies files to and from the server. Finally, the times are averaged and totaled.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.



D is for Desktop, E is for Effort, L is for Low price, and L is for Long support hours. The Dell System 333D lacks the capacity to serve users on a large LAN, but it will please everyone else.

ROBERT CARDIN

coupled to a high price: Compaq's proprietary memory modules cost about $400 per megabyte, compared with $80 per megabyte for standard SIMMs. You can upgrade to a 33-MHz 486 CPU by swapping processor cards. The system chassis shows the usual Compaq attention to fit and finish, and the case uses thumbscrews.

As we go to press, Compaq has just announced toll-free technical support, correcting a long-standing policy of not supporting users directly. Time constraints prevented our testing the quality of the new support, and we are therefore not changing our original support rating of Fair.

The 386/33L did a bit better than the AST on our NetWare tests but overall did a bit worse. If drive arrays attract you, the Deskpro is a great buy for a server. Otherwise, the less expensive AST is the wiser choice.

Dell System 333D

PROS: Super support, low price, fast

CONS: Limited CPU-speed RAM capacity

At $4659, Dell's System 333D is one of the least expensive computers in this roundup, yet it outperformed every computer here but the Arche. The *D* in 333D stands for *desktop,* so it's hardly surprising that this system lacks the storage and RAM capacities desirable in a large server. But it's a good choice for a smaller, less-ambitious server and a superb deal as a workstation.

Dell builds almost everything into the system board, giving you six free AT-style slots. The four half-height drive bays and 16MB of CPU-speed RAM are adequate for most workstations but not for many servers. It's the only unit reviewed to include super VGA rather than standard VGA, so you don't have to pay extra for higher-resolution graphics.

The design is superb inside and out. The 333D's small-footprint chassis is sturdy yet light—it opens with thumbscrews and features front-panel on/off and reset switches.

Dell's support is the best in the business. The one-year warranty includes on-site service, the long support hours include Saturdays, and the number is toll-free. On each of our test calls, we held for only 1 or 2 minutes. As with AST, you can phone a machine and get additional documentation faxed to you.

The 333D is a fast, well-supported system at a great price. The 16MB RAM limit and modest device capacity rule it out for serving large LANs, but the Dell System 333D is a nice departmental server and a super workstation.

NEC PowerMate 386/33E

PROS: Low price, excellent expandability, fast in Windows

CONS: Limited RAM capacity, slow non-Windows performance

NEC's PowerMate 386/33E has a low $5108 street price and plenty of room for expansion. But it's limited by a 16MB fast-RAM ceiling, and aside from a zippy *Windows* score, performance was relatively slow.

Designed with *Windows* in mind, the system comes with the program. NEC says the PowerMate's excellent *Windows* performance is likely due to a proprietary application-specific integrated circuit (ASIC) chip that controls mem-

EXECUTIVE SUMMARY

Arche and AST: Power for Today and Tomorrow

Cutting-edge performance and room for at least 32MB of fast RAM ready these systems for the future.

Experience 486-class performance for thousands less with a 33-MHz 386. If you want a workstation ready to run future applications, pick an excellent performer with room for more than 16MB of fast RAM.

Thanks to blazing speed, room for 32MB of fast RAM, and excellent service and support, the **Arche Legacy 386-33** wins a Best Buy—it's the best workstation of the bunch. But if you need a server, choose the **AST Premium 386/33TE.** This tower PC can't quite match the Legacy's performance, but it accommodates a whopping 80MB of fast RAM, has room for six drives (including a 1GB option), and sells at a deeply discounted street price.

	ALR BusinessVEISA 386/33	Arche Legacy 386-33	AST Premium 386/33TE	AT&T 6386E/33 WGS	Compaq Deskpro 386/33L	Dell System 333D	NEC PowerMate 386/33E	Tandy 4033 LX	Zenith Data Systems Z-386/33E
Performance	Good	Excellent	Good	Good	Good	Good	Fair	Poor	Fair
Expandability	Fair	Good	Excellent	Excellent	Excellent	Good	Excellent	Fair	Fair
Fast-RAM capacity	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Good	Good
Design and construction	Good	Good	Good	Fair	Excellent	Excellent	Good	Excellent	Fair
Service and support	Fair	Excellent	Excellent	Good	Fair	Excellent	Good	Good	Poor
Price	Excellent	Good	Good	Poor	Fair	Good	Good	Fair	Fair
Overall value	Good	Excellent	Excellent	Fair	Good	Good	Good	Fair	Fair
		BEST BUY	BEST BUY						
Reader service no.	681	682	683	684	685	686	687	688	689

How we rate 33-MHz 386 systems
We rate these systems based on information in the Features Evaluation and the PC World Test Report, combined with our opinions of quality, reliability, and user benefit.

Performance is derived from standard-deviation analysis of benchmark results, with extra weight given to the Novell NetWare office simulation, *1-2-3*, and *Windows* tests.

Expandability covers the number and kind of free slots available, as well as the number of drive bays and the capacity of available hard disks. An Excellent rating requires five open slots, five half-height drive bays, and the ability to accept a full-height drive or a second hard disk.

Fast-RAM capacity refers to the amount of RAM installable on system and memory expansion boards that is available to the CPU without wait states. To win an Excellent rating, a system must accept at least 32MB of fast RAM.

Design and construction evaluates the quality of manufacture, accessibility of controls, and ease of use when working inside the computer. To earn an Excellent rating, a system must be built around a sturdy, easily accessible chassis, offer switchless setup of memory, drives, and ports, and be free of major design flaws.

Service and support includes the length of warranty and the quality and availability of phone support, documentation, and other support services. At least one year's full warranty, long support hours, and effective response to our test calls are required for an Excellent rating. Extra credit is given for toll-free and weekend technical support and free on-site service.

Price ratings are determined by calculating the standard deviation from the average street price. The street prices used were determined from our survey of over 100 dealers in eight U.S. cities.

Overall value is averaged from all the above criteria, with special emphasis placed on performance and expandability.

ory management, a major *Windows* bottleneck. Elsewhere, the system's performance was disappointing, especially at NetWare. By the time you read this, NEC is scheduled to ship a more expensive controller that should improve network performance.

The 386/33E's architecture mixes the old and the new. All five open slots are EISA, but you must flip motherboard switches to set up the system. One nice touch: NEC includes a floor stand so you can use the unit as a tower.

NEC's support is responsive: Each of our calls was answered immediately. Unfortunately, the company offers no toll-free access, on-site service, or weekend support, but some NEC dealers may fill some of these gaps.

With better performance, this roomy, well-designed computer would make a fine server. For now, however, the PowerMate is a good buy only if you need a *Windows* workstation.

Tandy 4033 LX

PROS: Well designed; excellent support

CONS: Slow, pricey, NetWare incompatibilities

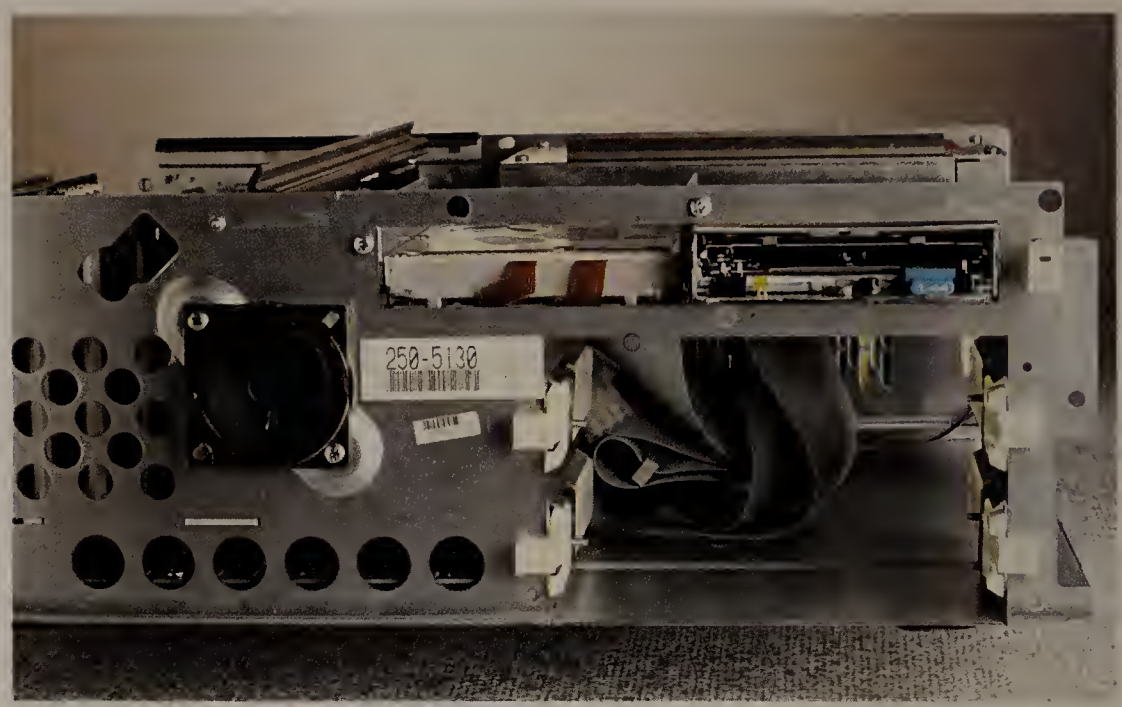
At first glance, Tandy's 4033 LX looks good: It's a well-designed box that comes with a great support policy. But the $7072 price is high, there are only four drive bays, and the 16MB fast-RAM limit is unexceptional. Worse, the

4033 LX is slow, coming in near the bottom in all our speed tests. It really crawled in our NetWare office test, but that was mainly because of a BIOS-compatibility problem. In order to complete the tests, we had to exclude the BIOS from the RAM cache.

The 80386 that powers the 4033 LX sits on a modular board, but no 486 is available, and Tandy remains mum on future upgrades. You get five open AT-style slots, but the system's four-drive capacity is adequate only for a workstation, and two of the slots require third-height drives, which reduces your selection somewhat.

The 4033 LX's fairly compact chassis offers several amenities, including front-panel on/off and reset controls. Tandy's tech support response was adequate: We were on hold from 2 to 8 minutes each time we called.

But a nice front panel and good support don't add up to a good computer. Completely out of the question for use as a server, the Tandy 4033 LX is also too slow and too expensive to make a good workstation.



The Tandy 4033 LX is solidly built, but with its four-drive limit, moving up to a large hard disk means losing a floppy or tape drive or buying more expensive external peripherals.

Zenith Data Systems Z-386/33E

PROS: None

CONS: NetWare incompatibility, slow, only four free slots

The Z-386/33E's most notable feature is its caching disk controller, which can host a whopping four ESDI, seven SCSI, and two floppy drives at once. But despite the high-tech effort, this $6728 system from Zenith Data Systems (ZDS) is slow (it came in next to last in our NetWare test) and suffers from NetWare compatibility problems.

If the caching controller makes you think "server," think again. In theory, a caching controller should improve performance, but our tests didn't bear that out. What's more, the three-layered controller sits in one EISA slot, but it's so wide that it takes up space that ZDS could have allocated to another slot. VGA and I/O take up two more slots, leaving only four open slots—the smallest total in the roundup. Otherwise, the Z-386/33E is a standard sheet-metal AT-clone box with room for five half-height drives.

A bug in ZDS's NetWare 3.0 drivers caused the NetWare DOWN command to hang the system. ZDS provides a work-around if you ask for it, but it's no substitute for well-written drivers. ZDS promises that a 3.1 driver will be available shortly.

As a workstation, the Z-386/33E still suffers from poor performance and a dearth of open slots. And the price is on the high side for a one-user machine.

The Z-386/33E's unique caching disk controller eats up an extra slot.

ROBERT CARDIN

ZDS earns a demerit for service and support—it's entirely dealer based. The odd warranty lets you choose between three months with on-site service or a year without it.

It appears that the Z-386/33E was rushed to market a little too quickly. It's not recommended.

A 33-MHz for Every Occasion

The Arche Legacy 386-33 is your Best Buy if you're looking for a modest server or a hot workstation. It's affordable, astonishingly fast, and reasonably roomy. But if "reasonably roomy" isn't enough, AST's Premium 386/33TE gives you expandability galore for only about $600 more. For the money conscious, the Dell System 333D makes a terrific workstation, although it's too limited to serve most LANs.

Chances are you'll be happy with any of these three systems for years. And when the time comes to replace it—say, five years from now—bargains may be available on 50-MHz 586 systems.

Scott Spanbauer is a contributing editor for PC World.

For more information about all products in this article, circle reader service no. 905.

ALR BusinessVEISA 386/33
Advanced Logic Research, Inc.
9401 Jeronimo
Irvine, CA 92718
800/444-4257,
714/581-9240 (fax)
LIST PRICE: Model 101 with 1MB of RAM, 5¼-inch 1.2MB floppy drive, one parallel and one serial port, one mouse port, 101-key keyboard $1995; Model 40 same as Model 101 except with 2MB RAM, 40MB IDE hard disk, 3½-inch 1.44MB floppy drive (in addition to 5¼-inch 1.2MB floppy drive), 800-by-600 VGA adapter and color display $4999; Model 80 (same as Model 40 except with 80MB IDE hard disk) $5499; Model 110 (same as Model 40 except with 106MB IDE hard disk) $5699
ACCESSORIES: 1MB RAM $199; 150MB ESDI hard disk $1800, 330MB ESDI hard disk $2590; 150/250MB tape drive $1100; 14-inch 800 by 600 super-VGA color display $699; AGS advanced graphics subsystem with 1024-by-768 graphics adapter, drivers, 15-inch color display $3300
WARRANTY: one year parts and labor, carry-in to ALR or Intel
EXTENDED WARRANTY: through dealer or Intel
TECHNICAL SUPPORT: voice and fax toll numbers, M–F 8–5
OTHER SUPPORT: in-house BBS
Reader service no. 681

Arche Legacy 386-33
Arche Technologies, Inc.
48881 Kato Rd.
Fremont, CA 94539
800/422-4674,
415/683-6754 (fax)
LIST PRICE: desktop version with 4MB of RAM, 5¼-inch 1.2MB floppy drive, ESDI 32K look-ahead caching controller (handles up to five peripherals), one parallel and two serial ports, 101-key keyboard, DOS 3.3 $4325, tower version (otherwise configured like desktop version) $4525; both versions available in an IDE configuration for $175 less
ACCESSORIES: 1MB RAM $170, expansion card populated with 4MB CPU-speed RAM $980; 44MB IDE hard disk $495, 104MB IDE hard disk $975, 380MB ESDI hard disk $2225; 3½-inch 1.44MB floppy or 5¼-inch 1.2MB floppy drive $110; 8-bit 256K VGA graphics adapter $145, 16-bit 512K 1024-by-768 VGA graphics adapter $295; 14-inch monochrome flat-screen display $135, 14-inch VGA color display $565, DOS 4.01 $60
WARRANTY: two years parts and labor, carry-in; optional two-year TRW on-site service $149
EXTENDED WARRANTY: through dealer
TECHNICAL SUPPORT: toll-free number, M–F 7–5
OTHER SUPPORT: technical manual $35
Reader service no. 682

AST Premium 386/33TE
AST Research Inc.
16215 Alton Pkwy.
Irvine, CA
92713-9658
714/727-4141,
714/727-9363 (fax)
LIST PRICE: Model 5 with 4MB of RAM, 5¼-inch 1.2MB floppy drive, one parallel and two serial ports, one PS/2-compatible mouse port, 101-key keyboard $6495; Model 335 (same as Model 5 except with 330MB SCSI hard disk and caching controller with 1MB of disk cache) $10,495; Model 665 (same as Model 335 except with 660MB SCSI hard disk and caching controller with 1MB of disk cache) $11,495
ACCESSORIES: 8MB RAM $1400, unpopulated Cupid RAM expansion card (holds up to 32MB) $375, 1MB RAM for Cupid RAM card $130, 4MB RAM for Cupid RAM card $700; 110MB IDE hard disk $1250, 320MB ESDI hard disk (no controller) $2900, ESDI controller $300, 1GB SCSI drive (no controller) $6500; SCSI host adapter (supports seven SCSI peripherals) $500; 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive $150; 800 by 600 super-VGA graphics adapter $329; 14-inch VGA monochrome display $225, 14-inch 800 by 600 super-VGA color display $695; DOS 3.3 $95, DOS 4.01 $125, OS/2 Standard Edition 1.1 $340, OS/2 Standard Edition 1.21 $345
WARRANTY: one year parts and labor, carry-in
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M–F 6–5, Sat. 7–1
OTHER SUPPORT: in-house BBS, fax tech support
Reader service no. 683

AT&T 6386E/33 WGS
AT&T
One Speedwell Ave.
Morristown, NJ 07920
800/247-1212
LIST PRICE: with 4MB of RAM, 3½-inch 1.44MB floppy drive, 135MB hard disk with ESDI controller, one parallel and two serial ports, one PS/2-compatible mouse port, 101-key keyboard $9995
ACCESSORIES: 16MB expansion board populated with 4MB RAM $1750, 2MB RAM $599; 135MB ESDI hard disk $2700, 300MB ESDI hard disk $3750; 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive $225; 33-MHz 80387 coprocessor $1595; VGA color/monochrome graphics adapter $449, 8514/A advanced graphics adapter $995; 12- or 14-inch VGA monochrome display $255, 14-inch VGA color display $599, 20-inch multifrequency (up to 1280 by 1024) VGA color display $3600; PS/2-compatible mouse $110; DOS 3.3 $95, DOS 4.01 $150, OS/2 Standard Edition 1.1 $340
WARRANTY: one year parts and labor, carry-in
EXTENDED WARRANTY: through direct sales representatives
TECHNICAL SUPPORT: through direct sales representatives
OTHER SUPPORT: E-mail
Reader service no. 684

Compaq Deskpro 386/33L
Compaq Computer Corp.
P.O. Box 692000
Houston, TX
77269-2000
800/231-0900
LIST PRICE: Model 120 with 4MB of RAM, 3½-inch 1.44MB floppy drive, 120MB IDE hard disk, one parallel and two serial ports, one mouse port, VGA on the motherboard, 101-key keyboard $9999; Model 320 (same as Model 120 except with 320MB ESDI hard disk and controller) $12,499; Model 650 (same as Model 320 except with 650MB ESDI hard disk and controller) $15,499
ACCESSORIES: 32-bit 6-socket unpopulated memory expansion board $449, 2MB single-socket memory module $799, 8MB single-socket memory module $4499, 8MB dual-socket memory module $3999, 32MB dual-socket memory module $17,999; 120MB IDE hard disk $1999, fixed disk expansion unit with 300MB hard disk $6399, 320MB ESDI hard disk and controller $5899, 650MB ESDI hard disk and controller $8899, fixed disk expansion unit with 650MB hard disk $9399, 240MB drive array pair with controller $3999, 420MB drive array pair with controller $5999; 3½-inch 1.44MB, 5¼-inch 360K, or 5¼-inch 1.2MB floppy drive $275; 80/120MB tape drive $899, 150/250MB tape drive $1999, 320/525MB tape drive $2399; 33-MHz Intel 80387 coprocessor $1599, 33-MHz Weitek 3167 coprocessor $2199; 2400-bps internal modem $399;
(continues)

WHERE TO BUY

(continued)
32-bit dual-speed token ring controller $1299; advanced graphics 1024 by 768 board $1299, 512K advanced graphics RAM board $339; 14-inch VGA monochrome display $299, 14-inch VGA color display $699, 16-inch advanced graphics color display $1699; DOS 3.31 $120, DOS 4.01 $150, OS/2 Standard Edition 1.1 $340, OS/2 Standard Edition 1.21 $340
WARRANTY: one year parts and labor, carry-in
EXTENDED WARRANTY: through dealer
TECHNICAL SUPPORT: through dealer
OTHER SUPPORT: none
Reader service no. 685

Dell System 333D
Dell Computer Corp.
9505 Arboretum Blvd.
Austin, TX
78759-7299
800/426-5150,
512/338-8700 (fax)
LIST PRICE: with 4MB of RAM, 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive, one parallel and two serial ports, one mouse port, super VGA on the motherboard, 101-key keyboard $3301
ACCESSORIES: 1MB RAM customer kit $99, 4MB customer kit $599; factory installed RAM 1MB $99, 2MB $199, 4MB $599, 8MB $1199, 16MB $2399; 40MB IDE hard disk $399, 80MB IDE hard disk $599, 100MB IDE hard disk $799, 190MB IDE hard disk $999, 330MB ESDI hard disk with controller $1799, 650MB ESDI hard disk with controller $2799; 3½-inch 1.44MB, 5¼-inch 360K, or 5¼-inch 1.2MB floppy drive $99; 40MB internal tape drive with adapter $329, 40MB external tape drive with adapter $429, 150/250MB internal tape drive with adapter $799; 33-MHz 3167 Weitek coprocessor $1195; 1200-bps internal modem with communications software $79.95, 2400-bps internal modem with communications software $129; 8-bit ethernet card $199, 16-bit ethernet card $279, 8-bit Arcnet card $159, 8-bit 4-mbps token ring card $399, 8-bit 16/4-mbps token ring card $795; VGA adapter $199; 16-color (simultaneous) advanced graphics 1024 by 768 adapter $899, 256-color (simultaneous) advanced graphics 1024 by 768 adapter $1299, 16-inch color display with 16-color 1024 by 768 adapter $1999; 14-inch VGA monochrome display $149, 14-inch VGA color display with adapter $399, 14-inch super-VGA color display with adapter $499; serial mouse $59.95; DOS 3.3 $99.95, DOS 4.01 $119, OS/2 Standard Edition 1.21 $299
WARRANTY: one year parts and labor, free on-site service
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M–F 6–9, Sat. 8–4
OTHER SUPPORT: in-house BBS
Reader service no. 686

NEC PowerMate 386/33E
NEC Technologies, Inc.
1414 Massachusetts Ave.
Bóxborough, MA
01719
800/632-4636
LIST PRICE: with 4MB of RAM, 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive, one parallel and two serial ports, one mouse port, 101-key keyboard, DOS 3.3 with GW BASIC, Windows 3.0 $5999
ACCESSORIES: 2MB RAM module $499; 140MB ESDI hard disk and controller $1900, 300MB ESDI hard disk and controller $3300, 300MB hard disk mirroring bundle (caching ESDI controller, two 300MB ESDI hard disks, mirroring module) $6000; caching ESDI controller $1450; hard disk mirroring module $800; 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive $199, 150MB tape drive $1399; 33-MHz 80387 coprocessor $1299; 1024 by 768 VGA adapter board $999; NEC MultiSync 2A color VGA display $799; DOS 4.01 $130, OS/2 Standard Edition 1.1 $325
WARRANTY: one year parts and labor, carry-in
EXTENDED WARRANTY: through dealer
TECHNICAL SUPPORT: through dealer
OTHER SUPPORT: in-house BBS
Reader service no. 687

Tandy 4033 LX
Tandy Corp.
1800 One Tandy Center
Fort Worth, TX 76102
817/390-3011
LIST PRICE: with 2MB of RAM, 3½-inch 1.44MB floppy drive, VGA card, one parallel and one serial port, one PS/2-compatible mouse port, IDE connector $4999
ACCESSORIES: 4MB RAM $700, 8MB RAM $1999, 16MB RAM $4100; 52MB IDE hard disk $599, 105MB IDE hard disk $899, 40MB SCSI hard disk (no controller) $699, 80MB SCSI hard disk (no controller) $999, 170MB SCSI hard disk (no controller) $1899, 440MB SCSI hard disk (no controller) $2599; SCSI host adapter $350; 3½-inch 1.44MB, 5¼-inch 360K, or 5¼-inch 1.2MB floppy drive $170; 60MB tape drive $400, 160MB SCSI tape drive $1099; 33-MHz 80387 coprocessor $994; 14-inch VGA monochrome display $200, 14-inch color VGA display $500, 14-inch color 800 by 600 super-VGA display $629; DOS 3.3 with GW BASIC $100, DOS 4.01 $140, Windows 3.0 $149
WARRANTY: one year parts and labor, carry-in
EXTENDED WARRANTY: through dealer
TECHNICAL SUPPORT: through dealer
OTHER SUPPORT: in-house BBS, CompuServe and PC-Link forums
Reader service no. 688

Z-386/33E
Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL
60089
800/553-0331
LIST PRICE: Model 150 with 4MB of RAM, 3½-inch 1.44MB floppy drive, interface card with one parallel and two serial ports, 150MB ESDI hard disk with 1MB cache memory, VGA adapter, Microsoft Mouse, DOS 4.01, Windows 3.0 $10,599; Model 320 (same as Model 150 except with 320MB ESDI hard disk with 1MB cache RAM) $11,999
ACCESSORIES: 1MB RAM $299, 4MB RAM $1199; 150MB ESDI hard disk with 1MB cache memory $2499, 140MB 5¼-inch hard disk and controller $1900, 320MB ESDI hard disk with 1MB cache RAM $3599; 3½-inch 1.44MB floppy drive $248, 5¼-inch 360K floppy drive $199, 5¼-inch 1.2MB floppy drive $250; 150MB SCSI tape drive (runs off the standard ESDI controller) $1299; 33-MHz 80387 coprocessor $1499; 1024 by 768 VGA-compatible Texas Instruments Graphics Architecture (TIGA) card $899; 14-inch paper-white VGA monochrome display $299, 14-inch color VGA display $999; OS/2 Standard Edition 1.21 $339
WARRANTY: one year parts and labor, carry-in, or three months of on-site service
EXTENDED WARRANTY: through ZDS reseller
TECHNICAL SUPPORT: through ZDS reseller
OTHER SUPPORT: in-house BBS and CompuServe forum
Reader service no. 689

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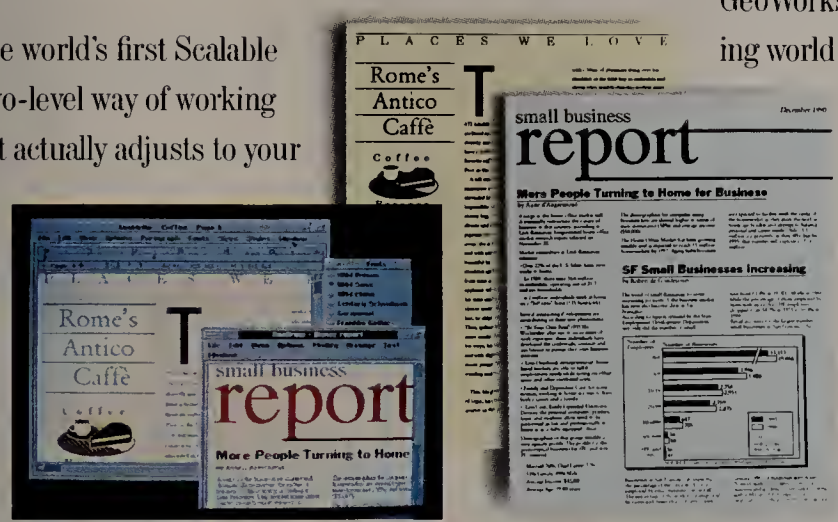

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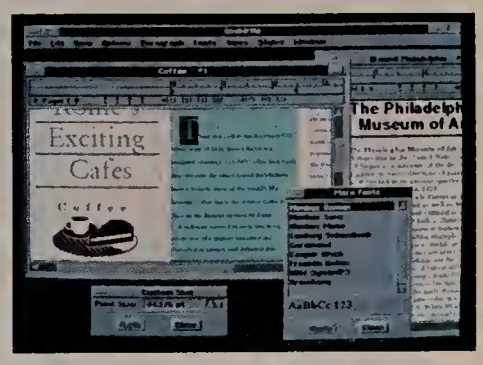

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Circle 92 on reader service card

Add HP NewWave to Windows and what do you get? Simply a breakthrough.

Windows 3.0 is a great step forward. It just doesn't go far enough. You still have to overcome barriers you thought you'd left behind. Such as DOS. The complexities of file management and application integration. And working in two environments.

The solution? Simply add HP NewWave. In this one simple step, you turn your PC into the most powerful, easiest-to-use information tool in business. To prove it, we've put an eye-opening, interactive demonstration on disk.

It shows how NewWave's simple object model lets you work on one desktop environment, instead of having to use both the Program and File Managers. You don't have to understand the DOS file system at all. And it works with the Windows applications you already have.

Integrating NewWave applications is astoundingly simple. Just drag and drop. "Drill down" editing lets you make changes in part of a document, such as a chart, without leaving it. And with "hot links," your data changes automatically in all connected files.

To evaluate NewWave, call (408) 376-2727 for your interactive demonstration disk. (Handling charge $3.95.) Then experience one of the most dramatic breakthroughs ever brought to your screen.

HEWLETT PACKARD

HP NewWave requires Windows 3.0 and an Intel 286 or 386 based PC with 640 Kb base and 2 Mb extended memory. Windows 3.0 is a product of Microsoft Corporation. © 1991 Hewlett-Packard Company NSS9016

More Profits From Personal Finance

Where does all the money go? These personal finance packages let you know—and help you hang on to more of it.

Suzanne M. Colvin

GUY BILLOUT

You spend most of your time trying to make money. Why spend the rest of your time trying to count it? Whether you need to track multiple investments, scrape up the money for a house, or simply balance your checkbook, personal finance software can help you make sense of your dollars.

The four personal finance packages reviewed here let you balance a checkbook, print checks, create budgets and reports, and keep track of income and expenses—without having to sort through stacks of checks or reams of bank statements. Most go further, letting you estimate yearly income taxes and import data into full-fledged tax preparation programs. Some track investments, manage loans and assets, and even let you pay your bills via modem (see the sidebar "Is CheckFree Hassle Free?").

But two packages stand out. For managing checkbook transactions and investments, the $60 *Quicken 4.0* is a steal. Unfortunately, *Quicken* comes up short in budgeting and loan tracking features. Only *Managing Your Money 7.0* gives you everything you'd want in a personal finance package. Though its $220 price tag puts the biggest dent in your wallet, its investment savvy and abundance of features easily earn it *PC World*'s Best Buy.

You can also use *Quicken* and *MYM* to manage a home business such as personal consulting or simple property management, thanks to their ability to segregate business and personal expenses and to track accounts receivable and payable. But you can't use these packages to, say, print customer invoices or compute volume discounts, and they lack the modules needed to compute payroll and manage manufacturing and inventory. Small businesses that require such features would do better with a low-cost accounting package (see "Budget-Wise Accounting," November 1990). But for simple business operations, either is a worthy investment.

Only Managing Your Money 7.0 gives you an accurate estimate of your tax liability.

Andrew Tobias' Managing Your Money 7.0

PROS: Integrated tax estimator and CheckFree modules, strong investment module, additional analysis features

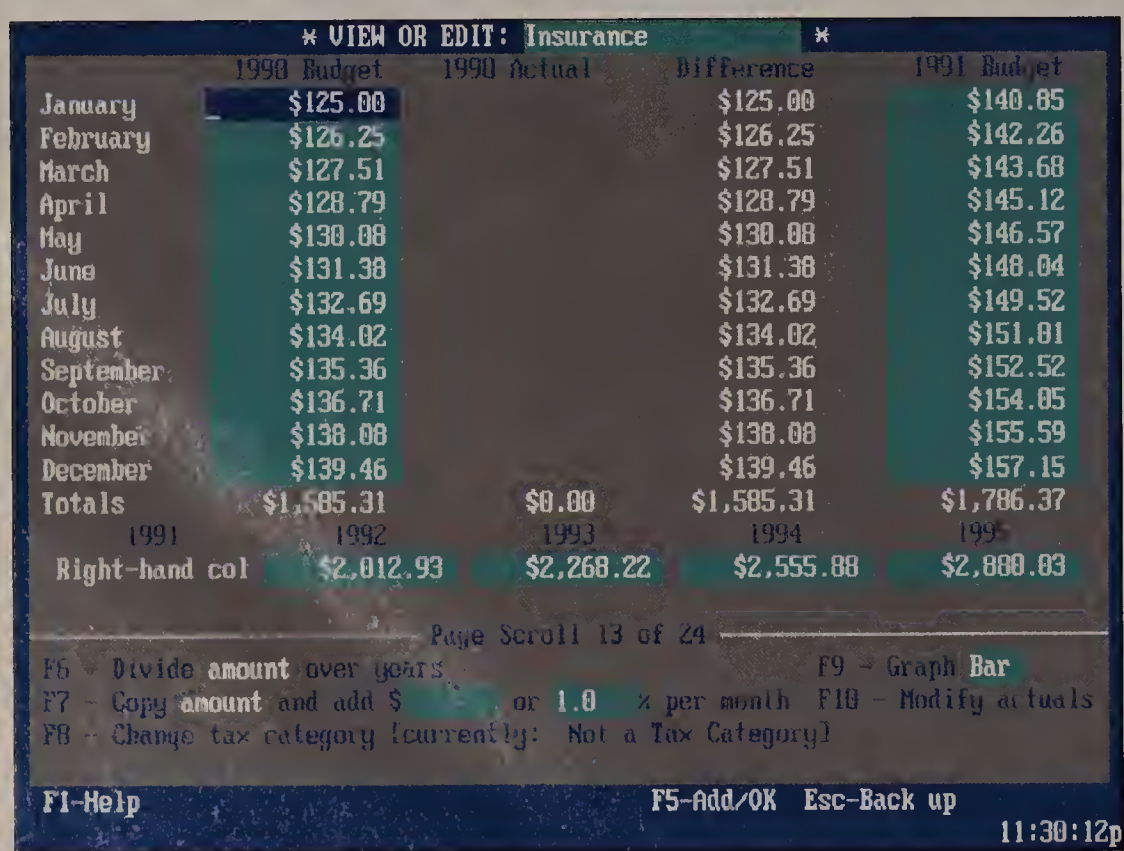
CONS: Complex, expensive

MECA's $220 *Managing Your Money* has been around a long time, but this is one old dog that's continued to learn new tricks. Version 7.0 adds a smooth menu-driven interface, improved reporting and transaction features, and the ability to handle multiple years of historical data. As always, the package is blessed with the pithy expertise of investment guru Andrew Tobias. Though *Quicken* continues to nip at its heels on the low end, *MYM*'s wealth of features makes it the Best Buy.

MYM's check-writing and budgeting capabilities are exceptional. The program maintains budgets for five years, and it keeps up to two years' historical transactions on line. From its checklike entry screen you can summon a list of all transactions with one payee or of all transactions in a budget category. And because *MYM* comes with the *CheckFree* electronic checking module built in, you can pay your bills from your PC. Simply enter the check information, mark it as a *CheckFree* transaction, and send it off via modem.

MYM helps relieve some dread at tax time. Its estimator module includes a summary Form 1040 plus supporting tax schedules, and it's the only program reviewed that gives you an accurate estimate of your tax liability, including exemptions and limitations. You can also import data directly into MECA's *TaxCut* tax preparation package.

Budding Wall Street moguls will appreciate *MYM*'s strong investment module, though it lacks a few of the extra features available in *Quicken*. You can track any type of investment transaction—including purchases, sales, dividends, and interest—and link to MECA's *Managing the Market*, which



With Managing Your Money 7.0, you can compute budgets for up to five years and increase budgets by a fixed amount or percentage to account for inflation.

BUYING SMART: INVESTING IN PERSONAL FINANCE

Personal finance packages should make managing your cash flow simpler, with easy-to-use modules for balancing your checkbook, creating budgets, and reining in expenses. The best programs also help handle your taxes, investments, and personal property, presenting information in a variety of reports. Here's what to look for.

CHECKBOOK MANAGEMENT

The heart of any finance package is its checkbook manager. The best ones have data entry screens resembling a check and search your financial data as you type, identifying common transactions and filling in the rest. Balancing your checkbook is a lot easier when the program displays uncleared transactions and lets you edit them as you go. And since you'll want to print checks using special paper, look for a package that prints multiple checks at once. Better yet, find one that lets you submit payments electronically—a great way to automate recurring expenses like mortgage payments.

BUDGETING AND EXPENSE TRACKING

Checkbook management alone isn't enough; you'll also need to create budgets and track expenses. Look for a package that lets you assign category names instead of numbers to transactions and link multiple categories (like wages and taxes) to a single transaction (such as your paycheck). It should maintain at least two years of historical data—so you'll always be able to look ahead or behind one month, even at year-end—and automatically determine budgets based on prior budget data. Avoid packages that make you manually enter each month's budget, year after year.

INCOME TAX ASSISTANCE

Personal finance software can help lighten your tax load. The top programs identify tax-related items, such as charitable contributions, and print a report for use at tax time. For even greater help, look for a tax-estimator module that computes exemptions and deductions and can export data to a tax preparation package.

INVESTMENT MANAGEMENT

A good financial package helps you take stock of your stock, tracking historical investment activity and classifying it as short- or long-term—a key to figuring your taxes. The system should maintain transactions by date, easily update stock prices, and keep a history of stock transactions or prices so you can review trends over time. Make sure the program provides basic reports such as tax and earnings, capital gains, and return on investment.

LOANS AND ASSET TRACKING

A good financial package tracks other items that contribute to your net worth, such as household goods, property, and loans. Select a package that reduces your loan balance every time you make a checkbook payment. Also consider packages that offer an analysis module for planning your financial future. If you need to manage a home business, look for the ability to track payables and receivables and segregate personal and business transactions.

REPORTING

Your program should print a variety of flexible reports—including budget versus actual reports and net worth statements. Look for a package that prints check registers sorted by date, check number, payee, bank account, and/or expense category. It should also let you prepare custom reports and import data into a spreadsheet.

EASE OF USE

If the program you choose doesn't make managing your finances easier, you've wasted your money. Look for an amenable interface with pull-down menus and context-sensitive help, plus default expense categories for easy start-up. Most important, avoid packages that use accounting terminology—especially if you're somebody who wouldn't know a debit from a credit. —*S. M. C.*

automatically updates stock prices on line. But unlike *Quicken*, *MYM* doesn't maintain a history of stock prices—information that may interest avid investors—and it can't prepare a return-on-investment report.

Helpful extras abound. Sophisticated financial analysis features help you decide whether to rent or buy a home, when to refinance a mortgage, and how much to sock away for a college or retirement fund. Another module determines your net worth—useful for filling out credit applications or gauging how much insurance to buy. You also get such

FEATURES EVALUATION

One for the Money

Best Buy Managing Your Money Offers a wealth of features.

◒ Yes ◒ No
● Deficient
▼ Limited only by available disk space

	Andrew Tobias' Managing Your Money 7.0	Cheque-It-Out 1.1	MoneyCounts 6.5	Quicken 4.0
Standard features				
Price	$219.98	$49.95	$35	$59.95
RAM required	512K	448K	384K	384K
Cantext-sensitive help	●	●	○	●
Laads default categaries	●	●	○	●
Checkbook management				
Checkbaoklike interface	●	●	○	●
Searches by category ar payee	●	○	●	●
Prints multiple checks	●	○	●	●
Autamated CheckFree interface	●	○	◒[1]	●
Budgeting and expense tracking				
Uses text categary descriptians	●	○	●	●
Allocates multiple categaries	●	◒[2]	●	●
Tracks expenses by department	●	●	●[3]	●
Na. af years budget data maintained	5	1	1	1
Na. af years actual data maintained	2	▼	1	▼
Increases budget by fixed amaunt	●	○	●	○
Income tax assistance				
Identifies taxable categaries	●	○	○	●
Repart af tax-related transactians	●	○	○	●
Estimates based an budget ar actual	●	○	●	○
Considers limitations	●	○	○	○
Links to tax preparation software	●	◒[3]	●	●
Investment management				
Displays stack price trends	○	○	○	●
Segregates shart- and lang-term items	●	○	○	●
Partfolia status and incame reports	●	○	○	●
Return-on-investment report	○	○	○	●
Loan and asset tracking				
Computes laan payments and amartizatian schedules	●	○	●	○
Reduces loan far checkbook payments	●	○	●	○
Tracks accaunts payable/receivable	●	●	◒[4]	●
Reporting				
Flexible repart sorting	●	◒[5]	◒[6]	●
Prints list af outstanding checks	●	●	●	●
Prints yearly budget repart by month	●	●	●	●
Prints budget-versus-actual report	●	●	●	●
	BEST BUY			

[1] CheckFree saftware must be purchased separately.
[2] User must exit checkbaak entry screen.
[3] Extra-cast aptian
[4] Payables anly.
[5] Can't sart by payee.
[6] Sarts anly by manth ar year.

PIM-like utilities as a calculator, a mailing list, and a reminder pad.

But power has its price: *MYM*'s many facets make it more difficult to learn. Each new feature adds menu choices, sometimes forcing users into a complex series of decisions. Fortunately, a menu-driven interface and detailed on-line advice make feature-rich *MYM* about as easy to use as it can be.

MYM has just about everything you could want in a financial manager, and then some. If you don't want those fancy extras—and don't need to track loans—*Quicken* is probably your best bet. Otherwise, *MYM* is top dog in this field.

Cheque-It-Out 1.1

PROS: Flexible reports, unlimited historical data, strong reconciliation features

CONS: Hard to use, can't track investments or other assets, poor check printing

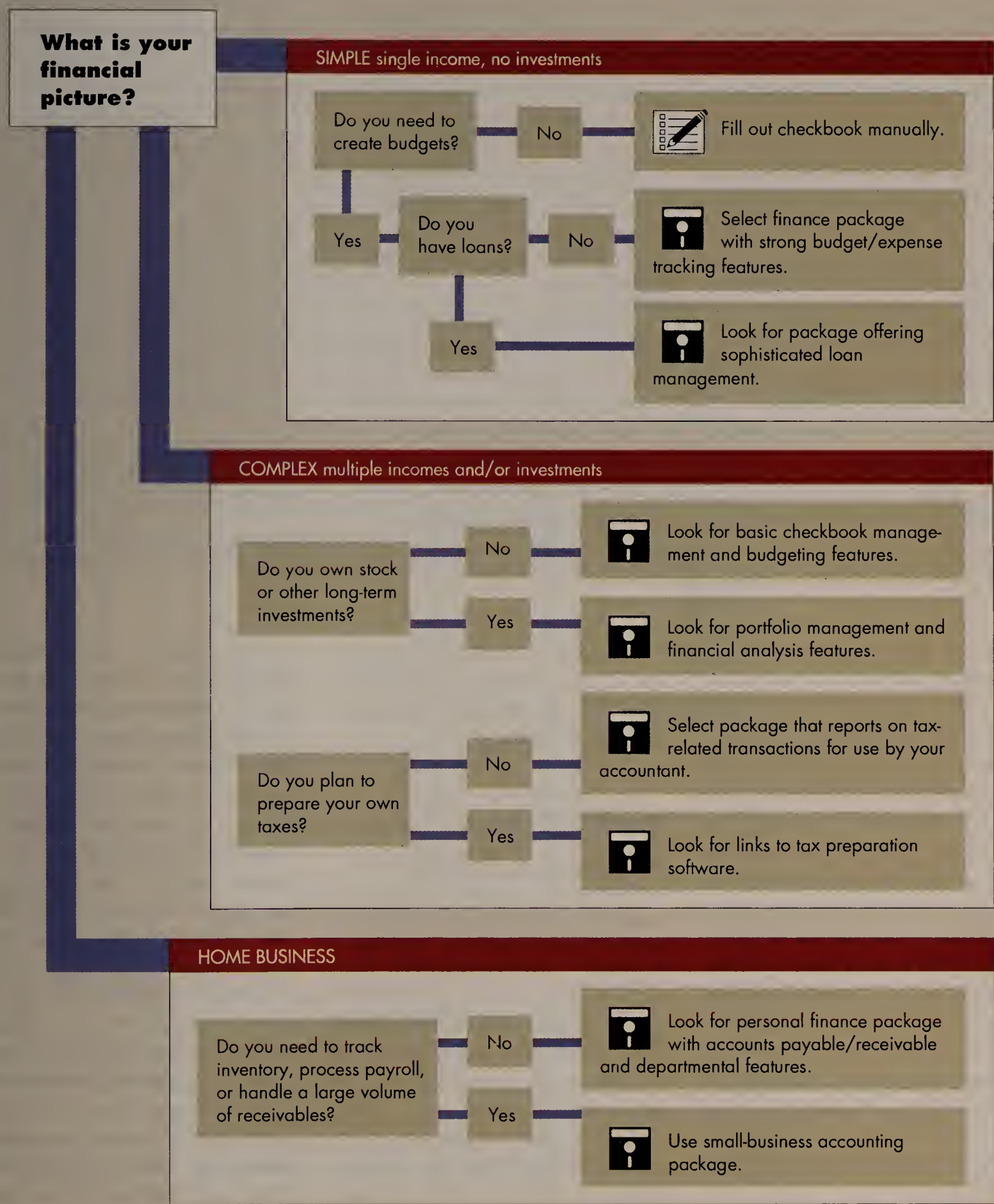
Cheque-It-Out is just a babe in the woods compared to old-timers like *Managing Your Money.* Unfortunately, Hooper's $49.95 program is still suffering growing pains. It's not as easy to use as *Quicken* or *MYM,* and it won't help you manage sophisticated investment transactions, compute loans, or estimate your taxes. While adequate for simple checkbook management and for producing reports, it's only a fair value.

As with most packages, the program's check-manager screen looks like a personal check: Simply fill in the amount, payee, and date, and assign it a category (such as rent). You can segregate checks into departments, which is useful for, say, managing rental properties. But unlike with the other programs, you must exit the check-entry screen to record recurring transactions or those with multiple categories, like mortgage payments. And you can print only one check at a time—no batch printing allowed.

Cheque-It-Out also comes up short in the budget department. It maintains an unlimited amount of past financial data but only one calendar year's worth of

Do You Need a Personal Finance Package?

Whether you're starting a career or a home business, you'll benefit from on-line financial guidance. Your choice depends on how complicated your financial picture is.



IS CHECKFREE HASSLE FREE?

Dan Lavin

In the future, all financial transactions will be electronic—at least, if the *CheckFree* people have anything to say about it. This $30 electronic checking program—built into *Quicken 4.0* and *Managing Your Money 7.0*—promises to make your paper checkbook virtually obsolete.

Using *CheckFree* is simple. Just fill in the amount, date, and payee on a checklike data entry screen and "mail" payments via modem to a local number. *CheckFree* automatically records payments in your check register and transfers funds from your account to the payee's via the Federal Reserve System used by almost all banks. (Firms unequipped to handle electronic payments are mailed printed checks.)

CheckFree costs about 45 cents per check (less if you send a lot of checks), comparable to the cost of bank charges and stamps. Its advantages are timely check processing and automatic handling of recurring payments such as mortgage bills.

Promise, however, does not always jibe with reality. Last year, *PC World* received several complaints about the service, ranging from unposted payments to poor customer support. CheckFree says it solved these problems; to test that claim, we used *CheckFree* to pay our bills for a month.

In general, payments went through without a hitch, though the gas company payment took about four days to post. We also called tech support several days at different times. Each time the phone was answered by an actual human, who capably handled our questions.

Still, some cautions remain. You should examine bank statements to ensure that payments are posted on time. And if you write a check at the corner store, you must remember to record it on line, or financial chaos will result. *CheckFree* won't entirely replace your checkbook, but it can help simplify your life—and make paying bills a little less painful.

WHERE TO BUY

CheckFree 2.0
CheckFree Corp.
720 Greencrest Dr.
Westerville, OH 43081
800/882-5280
LIST PRICE: $29.95, plus $9 per month for 20 transactions, $3 for each additional 10
REQUIREMENTS: 256K, DOS 2.1 or later version, modem
Reader service no. 605

budgets, so if you're working on January's budget, you can't see what you did in December. *Cheque-It-Out* won't copy budget data from one month to another—you must enter it manually. And because the program displays only one monthly budget at a time, you can't view an entire year's data at once.

Cheque-It-Out's strengths are its reconciliation (checkbook balancing) and reporting features. The program lets you reconcile more than just bank accounts—it can flag medical expenses filed with your insurance company, for instance—but you can't edit account transactions as you go. Flexible report capabilities enable you to sort by date, check number, or entry order and print weekly, biweekly, semimonthly, and yearly reports.

Despite strong reporting and reconciliation capabilities, *Cheque-It-Out* has too many gaps to earn a recommendation. If you're looking for simple, low-cost checkbook management, *Quicken* costs only $10 more.

MoneyCounts 6.5

PROS: Inexpensive, good loan management

CONS: No checkbook interface, poor checkbook balancing features, unreliable tax estimator, limited reporting

At first glance, Parsons Technology's $35 *MoneyCounts* looks like a bargain. Dig beneath the surface, however, and you'll find flaws. It's the only program that lacks a checkbook interface, and its checkbook balancing and tax estimator are poor. Low price and solid loan management are *MoneyCounts*' primary virtues, and overall it's only a fair value.

MoneyCounts isn't the friendliest financial companion. Instead of completing an on-screen check, you must fill in an old-fashioned data entry screen. Check numbers are required and must be numeric, which means there's no easy way to identify automated teller transactions. On the other hand, the program searches financial records as you type, filling in the entry screen when it finds a match with previously entered data.

MoneyCounts handles only bank accounts—you can't track non-cash items such as charitable contributions of property, and there isn't a default set of expense categories for easy start-up. *MoneyCounts* also lacks an electronic check-paying facility; the program accepts *CheckFree* data, but you must purchase *CheckFree* separately.

Checkbook balancing is extremely

poor. A good program lists all uncanceled checks at once and allows you to mark canceled checks as you find them. *MoneyCounts* displays transactions one at a time in the order they were recorded; you must search your bank statement for each item to see if it cleared.

MoneyCounts' simple income tax estimator uses annualized actual or budget information to estimate liabilities, and the program links to Parsons' own *Personal Tax Preparer.* However, it doesn't properly compute certain deductible amounts, such as medical expenses. Don't rely on *MoneyCounts* to provide an accurate tax estimate.

MoneyCounts offers basic reporting capabilities, but printing the reports proved difficult. The program prints transactions in transaction-number order and can't sort by date or check number or by multiple criteria at the same time (for example, by payee in chronological order).

MoneyCounts' strongest feature is its loan capability, where it bests all but *MYM.* The financial calculator estimates loan payments and present and future values and, unlike *Quicken,* correctly reduces your loan balances when you record loan payments in your checkbook.

If all you need to do is manage loans, *MoneyCounts* is a possibility. If you're more than just a loan ranger, however, you should pony up the silver for a more well-rounded package.

Quicken 4.0

PROS: Inexpensive, easy to use

CONS: Limited loan and budget tracking, no tax-estimation module

Dollar for dollar, there isn't an easier personal finance package than *Quicken 4.0.* Its checkbook manager is first-rate, and its investment manager is the best in the roundup. So why isn't the $60 *Quicken* a Best Buy? Because it lacks the loan management, budgeting, and tax-estimation panache of *Managing*

EXECUTIVE SUMMARY

Manage Your Money Easily—From Checks to Taxes

Programs like Managing Your Money help keep your personal finances in top fiscal condition.

Personal finance software lets you write checks, balance your checkbook, manage loans and investments, and plan your economic future.

Best Buy **Managing Your Money 7.0** does all the little things right, from handling checks and balances to gauging how big a bite Uncle Sam will take—and it gives you plenty of extra tools for long-term investment planning. Runner-up **Quicken** is cheaper and easier to use, but it lacks MYM's loan-handling prowess and tax acumen.

	Andrew Tobias' Managing Your Money 7.0	Cheque-It-Out 1.1	MoneyCounts 6.5	Quicken 4.0
Checkbook management	Excellent	Fair	Fair	Excellent
Budgeting and expense tracking	Excellent	Fair	Fair	Gaad
Income tax assistance	Excellent	n/a	Fair	Gaad
Investment management	Excellent	n/a	n/a	Excellent
Loan and asset tracking	Excellent	n/a	Gaad	n/a
Reporting	Excellent	Gaad	Fair	Excellent
Ease of use	Good	Fair	Fair	Excellent
Overall value	Excellent	Fair	Fair	Excellent
	BEST BUY			
Reader service no.	602	603	604	n/a

How we rate personal finance programs
We rate personal finance pragrams based on informatian in the Features Evaluation table, combined with our hands-on evaluation of user benefit and ease of use.

Checkbook management measures the ability to record transactions, print checks, and balance checkbooks. To earn an Excellent rating, packages must perfarm all functions easily, autamate the recording of recurring payments, and provide electranic checking.

Budgeting and expense tracking gauges how well the program lets you prepare budgets and compare them against actual results. Packages with an Excellent rating maintain data for mare than one year, copy data from other budgets, and let you allocate multiple categories to transactions.

Income tax assistance evaluates how pragrams prepare tax reports and estimate taxes. An Excellent rating means the program provides reports on tax-related transactions, produces a reliable tax estimate, and provides links ta a tax preparation program.

Investment management refers to the tracking and analysis of investment transactions. To be rated Excellent, a package must easily update stock prices, track historical transactions ar stock prices, and provide flexible reports.

Loan and asset tracking considers the ability to manage assets other than bank or investment accounts. An Excellent program must accurately track loan transactions, manage accounts receivable and accaunts payable, and affer financial planning analysis.

Reporting rates the sorting and printing of financial information. An Excellent score means the package prints reports far any user-defined period in a variety af sorted orders ond lets you create and store customized reports.

Ease of use is critical. An Excellent rating means the program is easy far novices to use, employing a pulldown menu interface with context-sensitive help, minimal or no accounting terminology, and default categories for easy start-up.

Overall value combines ratings for all criteria, taking into account price and technical support.

Your Money. It's an excellent buy, but not the best one.

Quicken's outstanding feature is its ease of use—it can be installed and running in minutes. Its unique check register screen looks just like the one you fill in manually when you write a check. Like *MYM, Quicken* also sports a built-in *CheckFree* module.

The program is a whiz at expense tracking. You can easily maintain one checkbook and segregate business and personal expenses by using more specific expense category names such as Rent/Prop1, Rent/Prop2, or Rent/Personal—perfect for managing multiple rental properties or a home business. *Quicken* also lets you mark expense categories as tax related, for easy printing of income tax reports. However, there's no tax-estimation module. Instead, you can export the tax data to Chipsoft's *TurboTax.*

Quicken 4.0's check register screen lets you enter and view multiple items, review your bank balance, and balance your checkbook by typing an X in the Cleared column.

Version 4.0's new investment management module tops *MYM*'s in some key areas. Easy to understand and use, it tracks two items that no other package maintains: historical stock prices and return on investment. *Quicken*'s investment reports are thorough, but unlike *MYM,* it can't automatically update stock prices on line.

Quicken's weaknesses are in budgeting and loan tracking. It maintains budgets for one year only and can't create monthly budgets based on loan schedules or easily increase amounts for inflation. You can manually allocate loan payments between principal and interest, but *Quicken* won't do it automatically.

If you're looking for a simple way to manage your checkbook or track investments, *Quicken 4.0* is a fine choice. But users with more sophisticated financial profiles should opt for *MYM.*

Ledger Domain

When you need a package that will help you manage your checkbook, look no further than *Quicken.* But if you want to develop and maintain your personal financial empire, Best Buy *Managing Your Money 7.0* is the only choice. No other program combines an accurate income tax estimator and investment module with the ability to track loans and plan for the long term.

You work hard for your money. Personal finance software makes it easier than ever for you to keep an eye on your assets—and make your money work for you.

Suzanne M. Colvin, CPA, is a manager with one of the Big Six accounting firms. Dan Lavin is technical editor for NeXTworld *magazine.*

For more information about all products in this article, circle reader service no. 901.

WHERE TO BUY

Andrew Tobias' Managing Your Money 7.0
MECA Software, Inc.
327 Riverside Ave.
Westport, CT 06880
203/222-9150,
203/226-2437 (fax)
LIST PRICE: $219.98
REQUIREMENTS:
512K, DOS 2.0 or later version
TECHNICAL SUPPORT:
unlimited, toll number,
M–F 8–8
OTHER SUPPORT:
newsletter
Reader service no. 602

Cheque-It-Out 1.1
Hooper Int'l
P.O. Box 50200
Colorado Springs, CO
80949
800/245-7789,
719/528-8997 (fax)
LIST PRICE: $49.95
REQUIREMENTS:
448K, DOS 2.0 or later version
TECHNICAL SUPPORT:
unlimited, toll number,
M–F 8:30–5:30
OTHER SUPPORT:
newsletter,
CompuServe forum
Reader service no. 603

MoneyCounts 6.5
Parsons Technology
375 Collins Rd. NE
Cedar Rapids, IA
52406
800/223-6925,
319/395-0217 (fax)
LIST PRICE: $35
REQUIREMENTS:
384K, DOS 2.0 or later version
TECHNICAL SUPPORT:
unlimited, toll number,
M–F 8:30 a.m.–9 p.m., Sat. 9–1
OTHER SUPPORT:
CompuServe forum
Reader service no. 604

Quicken 4.0
Intuit
P.O. Box 3014
Menlo Park, CA
94026-3014
800/624-8742
LIST PRICE: $59.95
REQUIREMENTS:
320K for DOS 2.0,
384K for DOS 3.0
TECHNICAL SUPPORT:
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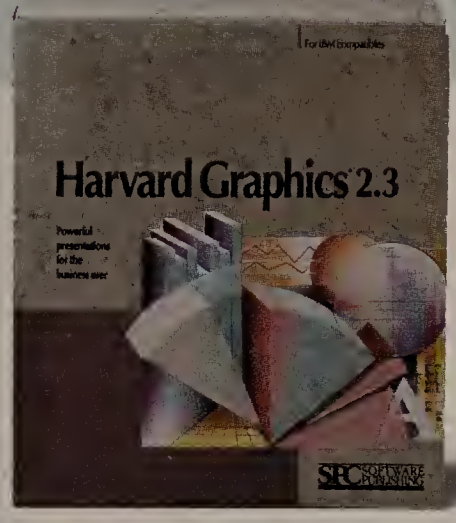

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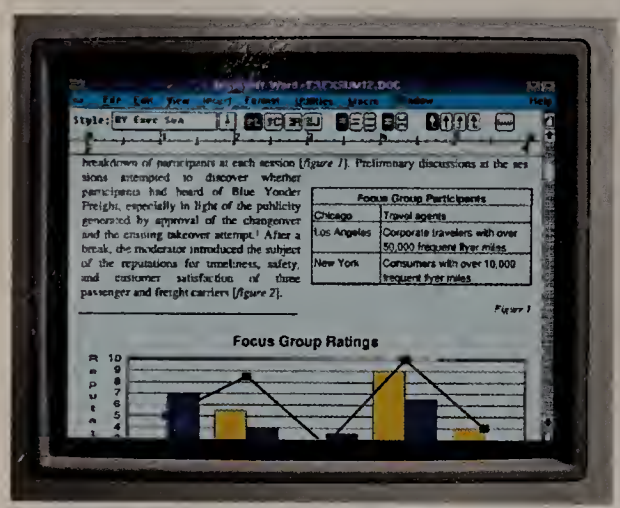

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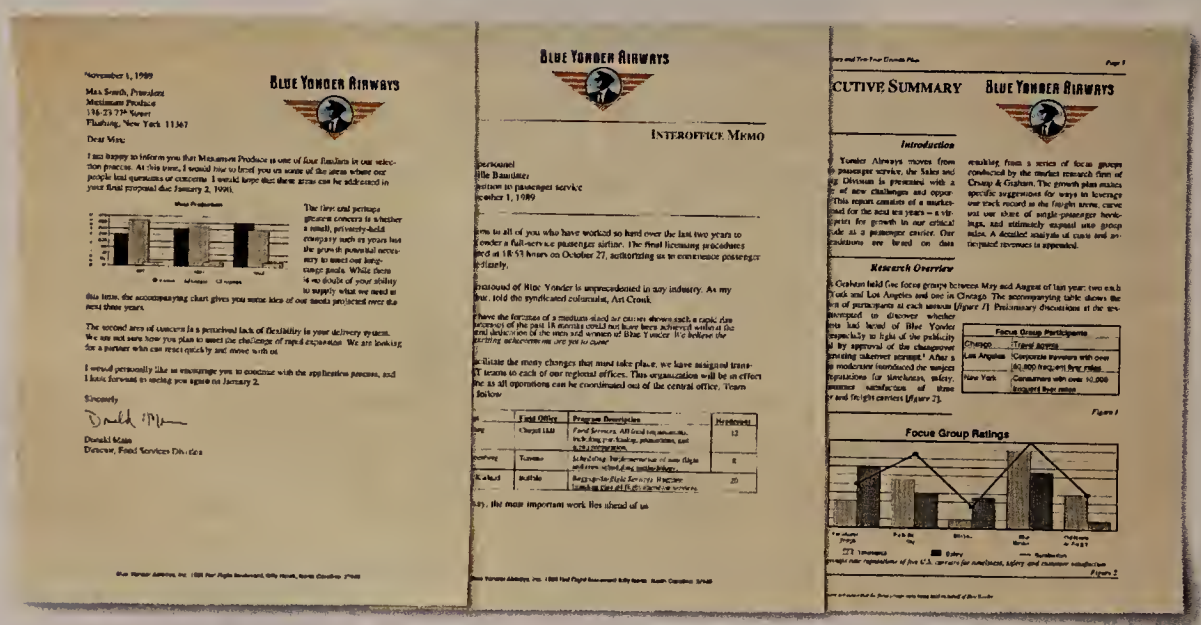

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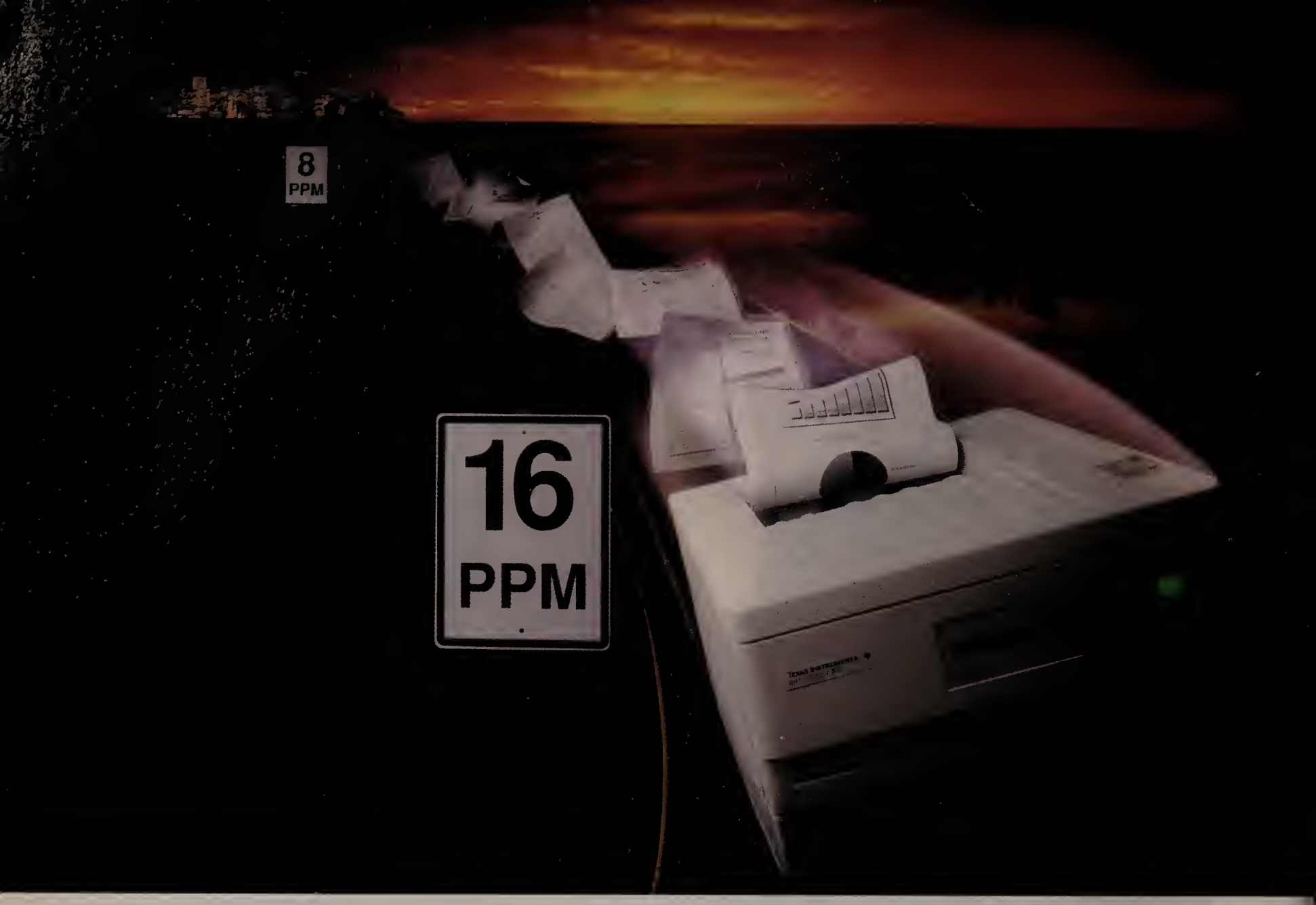

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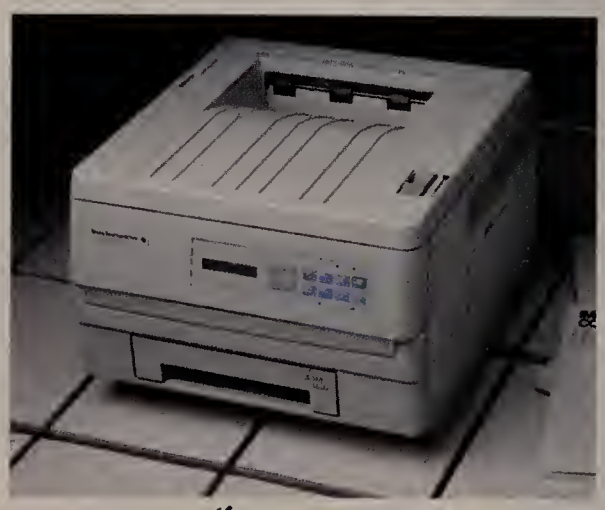

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Judy Heim

BILL WESTHEIMER

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The only way to get at these riches is with a modem and a communications package, a tandem that many companies depend on for handling PC-to-PC file transfers between branch offices. Faxes are fine, but they're uneditable images, dead on arrival. When you send by modem, the file lives on.

Though you'll rarely be aware of the modem itself, you *will* be getting personal with your communications software, so make sure you're the best of friends. Only a few new bells and whistles have arrived since our last roundup a year and a half ago, but, more important, most programs have become easier, especially for new users.

Windows on Communications

Four of the packages reviewed here seek an edge in ease of use by tapping *Windows'* visual approach to computing. Compared to character-based programs, all the *Windows* packages make it easier to cut and paste text to and from on-line sessions, and all let you work on another program while you're transferring files. Some offer Dynamic Data Exchange (DDE) links to other *Windows* applications for automating communications—they can pass selected on-line news to *Ami Professional*, for example, where a macro automatically formats it into a custom newspaper. Several packages offer innovative icon-based front ends—just click on an icon, and your modem dials CompuServe; click on the airplane icon, and start making travel reservations.

What could be easier? Nothing—if the icons were easy to set up. Although we're wild about *Windows*, we were at a loss to find a Best Buy among the *Windows* packages—each had at least one major problem or omission. Oddly enough, the promising icon-based interfaces of *DynaComm* and *MicroPhone* turned out to be the thorniest, and the least innovative *Windows* contender—*Crosstalk for Windows*—was the best *Windows* value.

Windows communications packages will undoubtedly improve, but for now the winners are among new, easier-to-use versions of old character-based reliables. We awarded four Best Buys. *Crosstalk Mk.4* is perfect for the high-end communicator who needs a heavy-duty scripting language, and its scaled-down sibling, *Crosstalk Communicator*, is tops for beginners. *HyperAccess/5* and *Procomm Plus* are aimed at the masses of casual users who fall in between.

So how did we make our choices? Ease of use is all-important, but features count too. You'll want a full list of error-checking file transfer protocols so you can swap files at the fastest possible speed without losing a byte of data. Basic messaging features such as a dialing directory are also crucial.

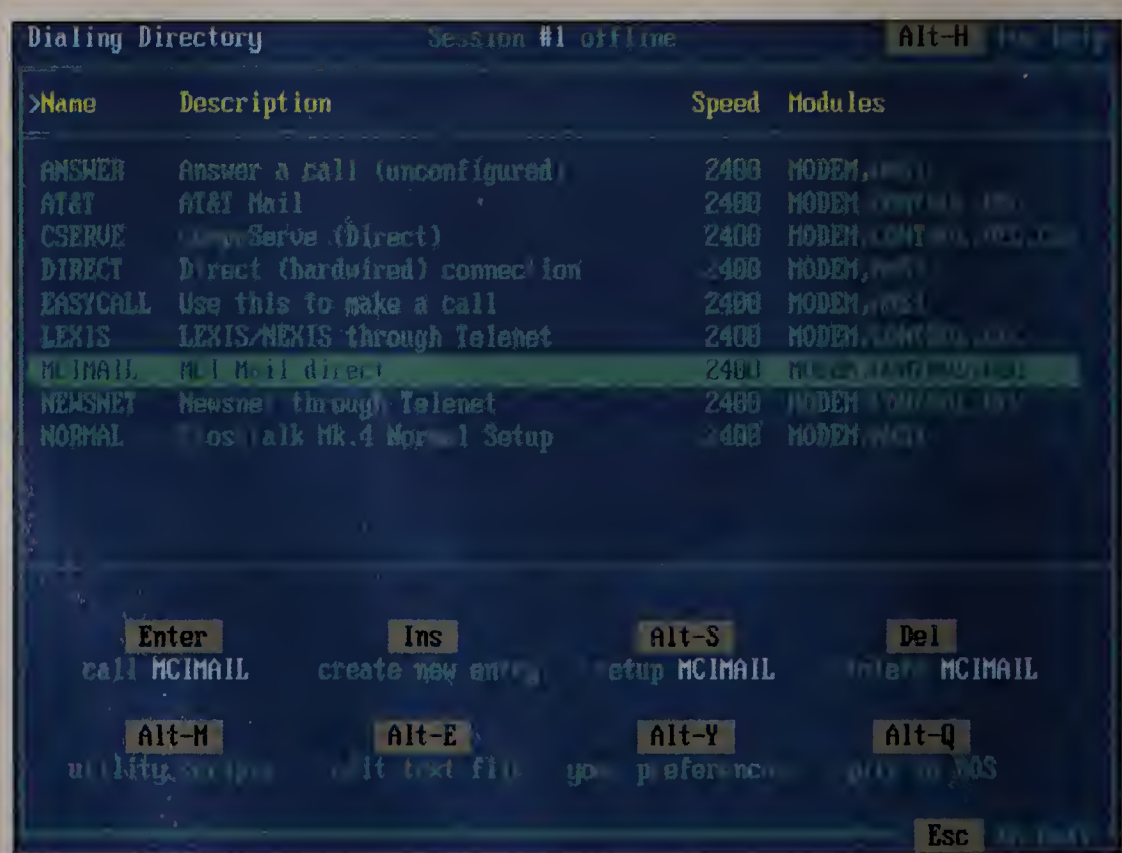
Multitasking features like background transfers are helpful if you send large files. Next in importance are advanced script languages for creating unattended applications; terminal emulations for logging on to minicomputers and mainframes; and remote operations, which let callers dial in to your unattended PC and swap files (see "Buying Smart" for more details).

Crosstalk Mk.4 2.0

PROS: Powerhouse script language, multiple sessions, numerous emulations

CONS: Skimpy remote mode, thorny documentation

Crosstalk Mk.4's original incarnation was blighted by a clunky interface that inspired users to hack together their own front ends. But DCA has changed all that with version 2.0—the much-improved interface revolves around a slick, *Procomm*-like dialing directory. *Crosstalk Mk.4*'s new ergonomics, combined with its heavyweight script language and sound terminal emulations, makes it well worth its $245 price tag. It's the Best Buy for the corporate power user with plans to design custom applications, and at last it's a good deal for



Best Buys Crosstalk Communicator and Crosstalk Mk.4 share the same easy-to-use dialing directory interface. You can modify the display to show other fields, such as the phone number and the last time an entry was called.

BUYING SMART: CHECKING OUT COMMUNICATIONS SOFTWARE

When evaluating a communications package, the key buying issue is ease of use, followed by messaging and file transfer support. Next in importance is multitasking, then session automation, remote options, and terminal emulations. Here are the key features to look for.

EASE OF USE

This is crucial. A program must offer an intuitive customizable interface off line and on line. Good interfaces have well-designed menus, dialing directories, hot keys, and mouse support. The package should provide easily modifiable preset scripts for popular services. Easy installation, clear documentation, and unlimited technical support are helpful.

MESSAGING

Each package should have an easily accessible dialing directory where you can view and modify all entries in one place. If you like to log on to BBS's, you'll want a queue dialer, which dials the next number if the first is busy.

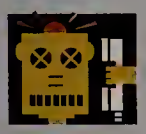
On line, you'll want an auto-capture buffer so you can scroll back through text, and you should be able to cut and paste that text to your local terminal screen and vice versa. Other on-line essentials include print and capture commands, an on-screen clock, and good status feedback during file transfers. You'll need a capable text editor or the ability to shell out to a word processor.

FILE TRANSFER

When swapping files with other PCs or on-line services, you'll want to use an error-checking protocol to make sure every byte that is sent is also received—even if you have an error-correcting modem. All the programs offer old reliables like XMODEM, but if your program has a faster protocol, such as YMODEM or ZMODEM—and your remote partner has the same—you can save a lot of time and money. Demand XMODEM, CompuServe B, Kermit, YMODEM, and ZMODEM.

MULTITASKING

If you frequently swap large files you'll want to be able to run other applications while a file transfers in the background. Performance shouldn't degrade, and you should have plenty of RAM left to run large applications. Less crucial—a few high-end programs let you run more than one session at a time either via multiple modems or a multitasking X.25 network such as Tymnet. This could come in handy for a stockbrocker who wanted to keep tabs on two stock services at once.



SESSION AUTOMATION

This category rates the power and flexibility of the script language and other tools for automating communications. You'll want keystroke macros so you can send frequently used text strings or launch scripts. Also essential is a learn mode that lets you record a log-on procedure and run it as a script.

You'll probably want to write a script that automatically logs on to a service such as CompuServe or MCI Mail, uploads and downloads E-mail, and logs off—perhaps in the middle of the night when rates are lowest. For this, you'll need to get your hands dirty with a script language. Corporate developers who need to create front ends for novice users will want far more power, such as the ability to create custom on-line interfaces with windowing commands.

Some programs offer special script editors that let you select commands from menus, and tools such as debuggers can help you troubleshoot a script. If you have a *Windows* package, it should support Dynamic Data Exchange (DDE) so you can automate transfers with other *Windows* programs—for example, downloading a Dow Jones stock quote and handing it to *Excel,* where a spreadsheet is automatically updated.

REMOTE MODE

These packages aren't true remote packages like *Carbon Copy,* but they all offer a remote host function so callers can dial in while the PC is unattended and swap files. The remote mode should provide several layers of password protection. Authorized users should be able to access DOS, and you should be able to define access by directory, not just by drive. The best packages are like miniature BBS's, with menus that guide the caller.

TERMINAL EMULATIONS

All the packages should offer the basic emulations, including TTY, VT-100/102/52, ANSI (IBM PC), and IBM 3101. With these, you can log on to just about any popular service or BBS. If you need to log on to a variety of minis and mainframes, it's best to have a good selection of more exotic emulations. —*J. H.*

FEATURES EVALUATION

Messaging and Protocols: The Keys to Communications

Crosstalk Mk.4 wins the features competition with solid messaging and a complete list of file transfer protocols. It also sports advanced features like multitasking and a variety of emulations.

● Yes
○ No
◒ Deficient

	Crosstalk Mk.4 2.0	Crosstalk Communicator	Crosstalk for Windows 1.1	DynaComm 3.0a	HyperAccess/5 1.1	MicroPhone II 1.0	Mirror III 2.0	Procomm Plus 2.0	Qmodem SST 4.2	Relay Gold 4.0
Standard features										
List price	$245	$99	$195	$295	$99.95	$295	$149	$119	$79.95	$299
RAM required	320K	320K	320K	150K	350K	256K	470K	192K	320K	256K
Windows application	●	●	●	●	●	●	○	●	○	○
Mouse support	●	●	●	●	●	●	●	●	○	○
Messaging										
Interactive dialing directory	●	●	○	○	●	○	●	●	●	●
Cut and paste from buffer	◒[1]	◒[1]	●	●	●	●	◒[1]	●	◒[1]	●
On-line text editor	●	●	●	●	●	○	●	●	●	●
Hot key to external word processor	●	●	○	●	●	○	●	●	●	●
Split-screen chat mode	◒[3]	◒[3]	◒[3]	○	◒[3]	○	●	●	●	●
Queue dialing	●	●	○	○	●	●	●	●	●	○
File transfer protocols										
Kermit	●	●	●	●	●	○	●	●	○	●
XMODEM/XMODEM CRC	●	●	●	●	●	●	●	●	●	●
YMODEM-G	●	●	○	○	●	●	●	●	●	●
CompuServe B	●	●	●	●	●	○	●	●	○	○
ZMODEM	●	●	●	○	●	○	◒[4]	●	●	○
Proprietary	●	●	●	●	●	○	●	●	○	●
Data compression	●	●	○	○	●	○	●	●	○	●
Multitasking										
Background file transfer	●	●	◒[5]	◒[5]	●	◒[5]	●	●	○	●
Multiple sessions	15	●	◒[7]	◒[7]	●	◒[7]	○	●	○	15
Session automation										
Keyboard macros	●	●	●	●	●	◒[8]	●	●	◒[8]	●
Prewritten log-in scripts	●	●	●	●	●	●	●	●	○	○
Learn mode	●	●	●	●	●	●	●	●	●	◒[9]
Remote mode										
Remote access	●	●	●	●	●	●	●	●	●	◒[10]
Remote access to DOS	●	●	●	●	●	○	●	●	●	◒[10]
Remote menus	●	●	○	○	●	○	●	●	●	○
Terminal emulation										
VT-100/102/52	●	●	●	●	●	◒[12]	◒[12]	●	◒[13]	◒[12]
ANSI and TTY	●	●	●	●	●	●	●	●	●	●
IBM 3101	●	●	●	●	●	○	●	●	○	●
Other emulations	11	1	1	7	7	0	18	28	2	5
	BEST BUY	BEST BUY			BEST BUY			BEST BUY		

[1] Limited to copying screen to file.
[2] Poste only.
[3] Requires o script.
[4] Must instoll seporotely ond register os shorewore.
[5] Vio Windows.
[6] For "experimentol" purposes only.
[7] Multiple sessions possible with multiple modems if you instoll multiple copies of progroms.
[8] Con only store test strings in function keys.
[9] Works only in TTY mode.
[10] Collers must olso use Reloy Gold.

Smartcom III 1.2a	Smartcom Exec 1.0a	Telemate 2.11	Unicom 2.0c
$249	$129	$40	$60
512K	512K	500K	120K
○	○	○	●
○	●	●	●
○	○	●	●
●	●	●	◒[2]
●	●	●	○
○	○	●	●
◒[3]	◒[3]	●	●
◒[3]	◒[3]	●	●
●	●	●	●
●	●	●	●
●	●	●	●
○	○	●	●
○	●	●	●
○	○	●	○
●	○	○	○
◒[6]	◒[6]	○	◒[5]
2	○	○	◒[5]
●	●	●	●
○	○	○	●
●	●	●	○
●	●	○	●
○	○	○	◒[11]
●	●	○	●
●	●	●	◒[12]
●	●	●	●
○	○	○	○
0	0	0	0

[11] Can only type files.
[12] No VT-102 terminal emulation.
[13] No VT-52 terminal emulation.

the casual user as well.

Crosstalk Mk.4 greets you with a friendly, customizable dialing directory, and <Alt>-*key* combinations lead the way to utilities, scripts, and well-designed setup screens. Logging on is as simple as moving to an entry and pressing <Enter>. Hit <Alt>-S instead, and you can tailor parameters and remap cursors and the keypad. On line, you use <Alt>-*key* combinations to launch file transfers, toggle into an improved editor, and even change settings on the fly.

If you don't like dialing directories, *Mk.4* offers three alternatives: its old, confusing pop-up menu front end, a *Crosstalk XVI* interface, and a command line. Most users will stick with the dialing directory (see the *Instant Reference Card* in this issue for *Mk.4* tips).

Mk.4 provides all major file transfer protocols, including the IND$FILE protocol used on IBM mainframes. Its list of 17 well-designed terminal emulations is one of the most complete in the roundup. *Mk.4* also supports synchronous devices such as DCA's IRMA card.

Mk.4's titanic script language, CASL, is the biggest and best in the roundup. CASL includes over 400 commands that handle everything from windowing to complex math. It offers unlimited variables, a debugger, and seven data types. By attaching commands and scripts to function keys, you can even create customized utilities.

Mk.4 lets you work on other applications while you're transferring files behind the scenes. This usually eats up a sizable 320K, but stripping away some features can pare it down to about 90K. The program also lets you run up to 15 simultaneous sessions with either multiple modems or Tymnet's X.PC protocol—handy for heavy-transaction duties. *Mk.4*'s host mode is austere—DCA would rather you buy its *Remote*.

No longer will *Mk.4* scare off novices. Despite its power, it's one of the easiest packages around. And for the advanced user who needs scripting, *Crosstalk Mk.4* is the Best Buy.

Crosstalk Communicator

PROS: Easy to use, many predefined scripts

CONS: Scantily documented script language, no background mode

The $99 *Crosstalk Communicator* is the subcompact version of the $245 *Crosstalk Mk.4*. Designed to take over the low-end slot held by *Crosstalk XVI*, *Communicator* succeeds—it's the Best Buy for beginners.

Nearly identical to *Mk.4*, *Communicator* lacks *Mk.4*'s background transfers, a few transfer protocols, and most of the emulations. Less important, it's also missing *Mk.4*'s synchronous mode and multiple sessions. But *Communicator* adds a few tricks, too—there's an expanded on-line menu and many more preset scripts for logging on to on-line services. A new mini-BBS host mode offers password protection, menus, and simple messaging. While *Communicator* includes the complete CASL script language used in *Mk.4*, DCA would like you to believe that only 13 commands are available—only 13 are documented.

Communicator's smooth dialing directory interface mimics *Mk.4*'s, and the dialog boxes are packed with just as many parameters. The only differences are in protocols and emulations. *Communicator* lacks *Mk.4*'s DART, Crosstalk, and IND$FILE protocols—no great loss for most—and emulations are whittled down to the usual six.

Crosstalk Communicator's low price, ease of use, and numerous preset scripts make it the Best Buy for the modem tenderfoot.

Crosstalk for Windows 1.1

PROS: Setup tutorial, easy cut and paste, efficient multitasking

CONS: No interactive dialing directory

The most feature-rich *Windows* package reviewed, the $195 *Crosstalk for Windows* includes *Crosstalk Mk.4*'s

powerful CASL language, fully documented. Neither its interface nor CASL takes full advantage of *Windows*, but it's your all-around best *Windows* value.

As with any *Windows* program, you select options from pulldown menus and then fill out dialog boxes. There are no icons, but you can customize and color-code 12 "buttons" that can launch scripts as well as issue keystrokes. The installation routine is tops—you can even select an on-line tutorial that covers communications basics.

Crosstalk for Windows is easy to set up, but it sorely needs a dialing directory. To get on line, you have to open the File menu, then select a phone book entry, and click again to dial. The entries are short and lack comments, and to find related data such as phone numbers and attached scripts, you must go to a separate menu.

Added to CASL are six commands that control DDE links to other *Windows* applications. But CASL lacks *DynaComm*'s tools for easily constructing *Windows* dialog boxes, scrolling lists, and buttons to custom front ends.

File transfers run in the background without a hitch, and cutting and pasting to the built-in notepad is a breeze. An above-average remote host mode offers solid security, but no menus.

Crosstalk for Windows lacks a dialing directory and yet fails to offer a better system that would exploit *Windows*. Still, it's a friendly, capable program and a solid buy.

DynaComm 3.0a

PROS: Good script longuage, windowing, icon-driven front ends

CONS: Limited remote mode, hard to set up, weak documentation, limited protocols, poorly designed XMODEM transfers

The most ambitious of the *Windows* communicators, Future Soft's $295 *DynaComm* is marked by a robust script language that supports DDE and *Windows* screen objects. *DynaComm* also exploits *Windows* by offering tiling and stacking windows, plus icon-driven front ends for a few on-line services. It's a good deal overall, but a confusing design, limited protocols, and some rough edges keep it from the top slot.

When you load *DynaComm*, an icon-based menu pops up the main program plus 19 utilities and scripts. These include the learn mode, a tutorial, and several games. Unlike with *MicroPhone II*, however, you can't launch on-line services from icons or add icons for your own log-in scripts.

Dialing a number is even more tedious than with *Crosstalk for Windows*—you click on the *DynaComm* icon to open the main screen, head to the File pulldown menu, select the option to open a file, choose the settings file, then go to the Phone menu and click on *Dial*.

The program includes scripts for seven on-line services that let you navigate by clicking on icons at the bottom of the screen. On CompuServe, for instance, you click on an envelope to get to your mail or on a jet to make airline reservations. But the icons only take you so far, and soon you're back to typing in commands. The visual cues make it easier to find what you want, but sometimes the icons can lead you astray, and for some services icons are blotted out.

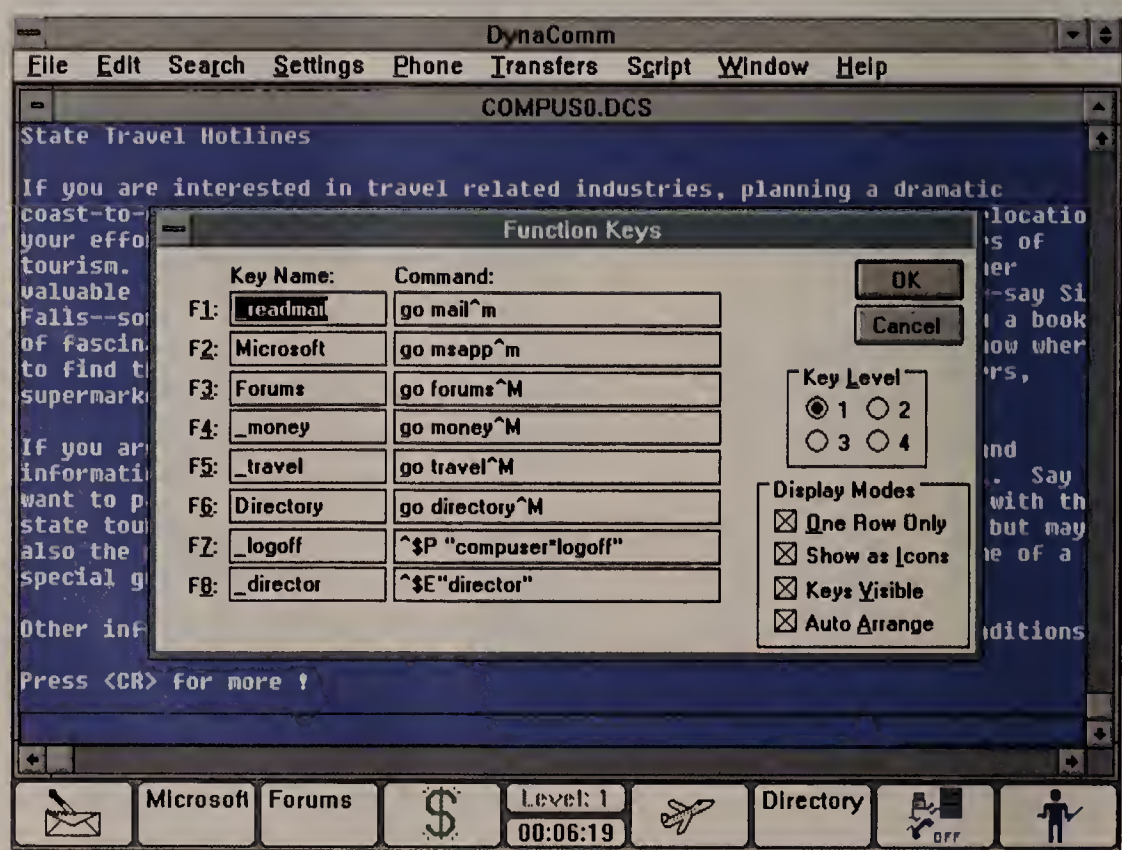
On line, you can access a modest editor, and cut and paste is flexible. Users of high-speed modems will miss ZMODEM and YMODEM-G, but a new version of *DynaComm* that includes these protocols should be out by the time you read this article.

File transfers have other problems—during XMODEM transfers of very large (over 300K) files, we encountered lockups that caused the transfers to be aborted. Also, during transfers, there's scant progress status, and there's no alarm upon completion.

DynaComm's sophisticated script language is comparable to that of *Crosstalk for Windows*, but it's better suited for creating *Windows* front ends. For example, you can easily script *Windows* artifacts like icons and dialog boxes.

You get 13 emulations, the most of any *Windows* contender. The remote mode is skimpy, however, lacking menus.

A mighty script language and impressive windowing make *DynaComm* shine, but a bumpy interface gets in the way. It's a good value, especially for developers who want to set up *Windows* front ends, but the program has yet to live up to its potential.



DynaComm provides icon-based front ends for popular services. On CompuServe, for example, you click on the airplane to move to travel services.

HyperAccess/5 1.1

PROS: Easy to use, polished emulations, slick cut and paste, good remote mode

CONS: No background transfers, no predesigned scripts

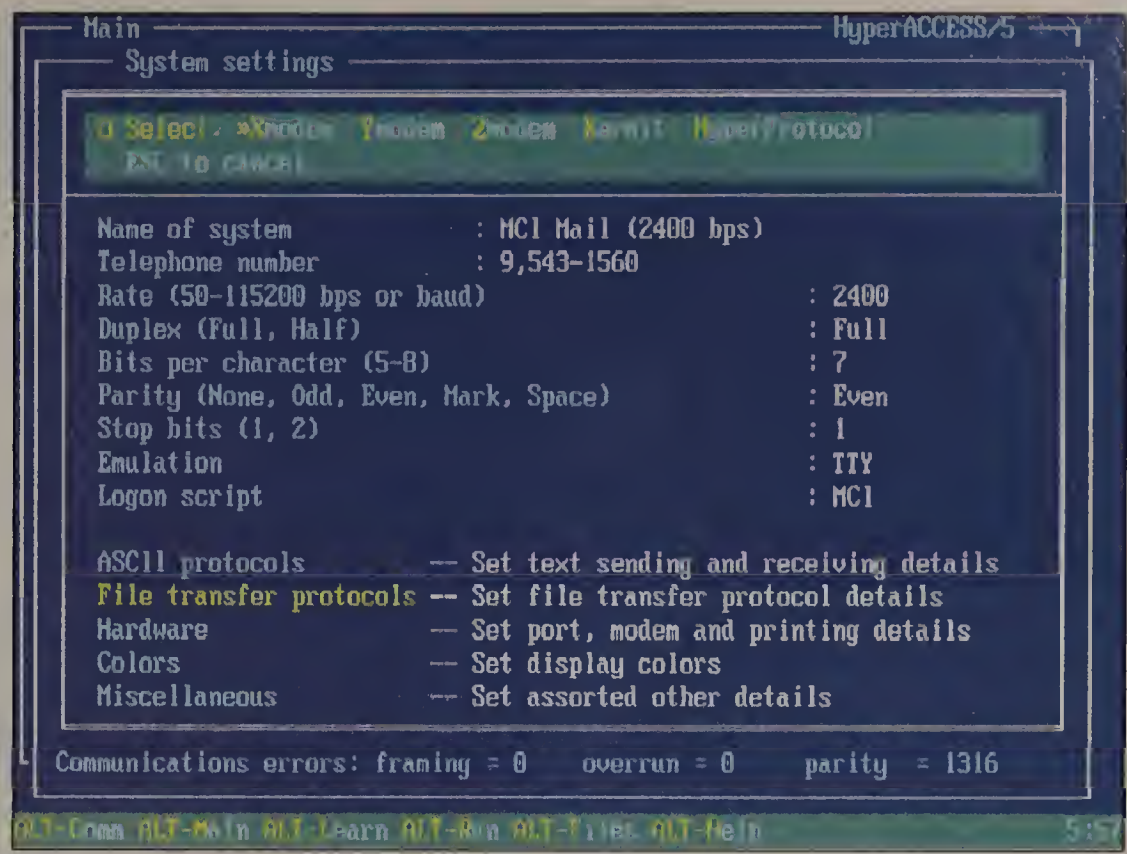
The easiest-to-use package in the roundup, Hilgraeve's $99.95 *HyperAccess/5* also packs a lot of features. You get a capable script language, numerous quality emulations, and a complete list of protocols, plus extras like data compression and virus detection. If you're a developer you'll probably prefer *Crosstalk Mk.4*, but the typical user will find *HyperAccess/5* the Best Buy.

The program opens with a logical, first-letter menu on top and a dialing directory below. You can choose an entry and dial the modem with just three keystrokes. On line, you can toggle back to the main menu or pop up a *1-2-3*–like banner menu. Unlike with *Mk.4*, all <Alt>-*key* shortcuts are conveniently listed at the bottom of the screen.

HyperAccess/5's cut-and-paste is better even than the *Windows* packages'. You can either use the exemplary editor or shell out to your own word processor. The learn mode is also the easiest in the roundup—a good thing, too, since there aren't any prewritten scripts for major services.

In addition to all the top protocols, you get Hilgraeve's proprietary data compression and a built-in virus scanner that scans downloads for the bit signatures of 68 viruses. It's an ingenious feature, but of negligible use since it won't work on compressed files. You'll find soundly implemented emulations such as those for IBM, Wang, and DEC terminals (including the DEC 220).

The script language is comparable to *Procomm*'s, and it's easier to use. A superb remote mode provides remote printing and a callback feature. By the time you read this, version 2.0 should be shipping, offering an expanded host mode that allows the remote running of text-only applications but still no background mode or prewritten scripts.



Setting up a dialing entry is straightforward with Best Buy HyperAccess/5. Here, you can select from a complete set of options, including all the top file-transfer protocols.

HyperAccess/5's top functionality and easy interface make this a Best Buy for dabblers as well as pros.

MicroPhone II 1.0

PROS: Icons for major services, mini-BBS

CONS: Few protocols and emulations, no DDE support

MicroPhone II jumps from the Macintosh to *Windows* with its colorful interface nearly intact—it's a festival of icons integrated with simple menus. But with its paucity of protocols and emulations, no support for DDE, and an occasional propensity to misbehave on line, it's only a fair value—especially at $295.

The program opens promisingly with a menu equipped with icons for CompuServe, BIX, Dow Jones, GEnie, and MCI Mail. Once you've set them up, clicking on any icon launches a script that logs you on to the service. This is how communications was meant to be.

Unfortunately, the scripts don't come plug-and-play. You have to fish around several menus to set them up, and in some cases you have to change parameters. If you forget to save the parameters (oddly enough, you must do so in a separate menu), the script forgets them after logging off. Setting up a new service is even more involved.

MicroPhone II lacks *DynaComm*'s on-line icons, but for major services you get on-line text buttons that provide a custom, mousable interface. The buttons are better behaved than *DynaComm*'s but just as shallow. On CompuServe, for example, you can click your way to the billing, games, and news sections, but then you're on your own.

There's no on-line status, not even a clock or a way to know whether you're capturing a file. Cut and paste is easy, but there's no editor aside from *Windows'* Notepad. *Microphone II* has the fewest protocols in the roundup—all you get are XMODEM, YMODEM, and YMODEM-G. Terminal emulations are limited to VT-100, VT-52, ANSI, and TTY. A mini-BBS feature includes menu-driven messaging and password protection but no access to DOS.

MicroPhone's limited script language is further hampered by the lack of DDE support, but by the time you read this a new version should include DDE. It also lacks *DynaComm*'s wizardry with *Windows* objects—there's

EXECUTIVE SUMMARY

Logging On Gets a Little Easier

Four Best Buy communications packages stress ease of use.

Communications packages are used with a modem to call in to remote on-line services and transfer files between PCs.

BEST BUY

For most users, **HyperAccess/5** and **Procomm Plus** are the Best Buys, thanks to easy interfaces and complete features. A potent script language paired with a dapper new interface makes **Crosstalk Mk.4** a Best Buy for the corporate power user who needs to design custom applications. If you're a newcomer to communications and you don't need high-end features like multitasking, Mk.4's cheaper, scaled-down sibling, **Crosstalk Communicator,** wins the honor.

	Crosstalk Mk.4 2.0	Crosstalk Communicator	Crosstalk for Windows 1.1	DynaComm 3.0a	HyperAccess/5 1.1	MicroPhone II 1.0	Mirror III 2.0
Ease of use	Excellent	Excellent	Good	Fair	Excellent	Fair	Poor
Messaging	Excellent	Excellent	Good	Good	Excellent	Good	Good
File transfer	Excellent	Excellent	Good	Fair	Excellent	Poor	Excellent
Multitasking	Excellent	n/a	Excellent	Excellent	n/a	Fair	Fair
Session automation	Excellent	Good	Excellent	Excellent	Good	Fair	Good
Remote mode	Fair	Good	Good	Fair	Poor	Good	Good
Terminal emulations	Excellent	Good	Good	Excellent	Excellent	Fair	Good
Overall value	Excellent	Excellent	Good	Good	Excellent	Fair	Fair
	BEST BUY	BEST BUY			BEST BUY		
Reader service no.	612	613	614	615	616	617	618

	Procomm Plus 2.0	Qmodem SST 4.2	Relay Gold 4.0	Smartcom III 1.2a	Smartcom Exec 1.0a	Telemate 2.11	Unicom 2.0c
Ease of use	Excellent	Excellent	Poor	Fair	Excellent	Excellent	Excellent
Messaging	Excellent	Excellent	Fair	Good	Good	Excellent	Good
File transfer	Excellent	Fair	Fair	Fair	Good	Excellent	Excellent
Multitasking	n/a	n/a	Good	Fair	Poor	n/a	Fair
Session automation	Good	Good	Good	Good	Good	Excellent	Poor
Remote mode	Excellent	Excellent	Poor	Fair	Fair	n/a	Good
Terminal emulations	Fair	Poor	Good	Fair	Fair	Fair	Fair
Overall value	Excellent	Good	Fair	Fair	Good	Good	Good
	BEST BUY						
Reader service no.	619	620	621	622	623	624	625

How we rate communications packages We rate these packages based on information in the Features Evaluation combined with our opinions of quality and ease of use.

Ease of use To win an Excellent, a program should be easy to install, set up, and use and be free of serious bugs. Extra points are given for unlimited tech support, mouse support, icons or buttons, and preset scripts for popular services.

Messaging To earn an Excellent, a program needs an interactive dialing directory, a full list of modem settings, and a capable editor (or the ability to shell out to a word processor). It also must provide on-line print and capture controls, a scrollable capture buffer, and flexible cut and paste.

File transfer To win an Excellent, the program must support XMODEM, YMODEM-G, Kermit, CompuServe B, and ZMODEM.

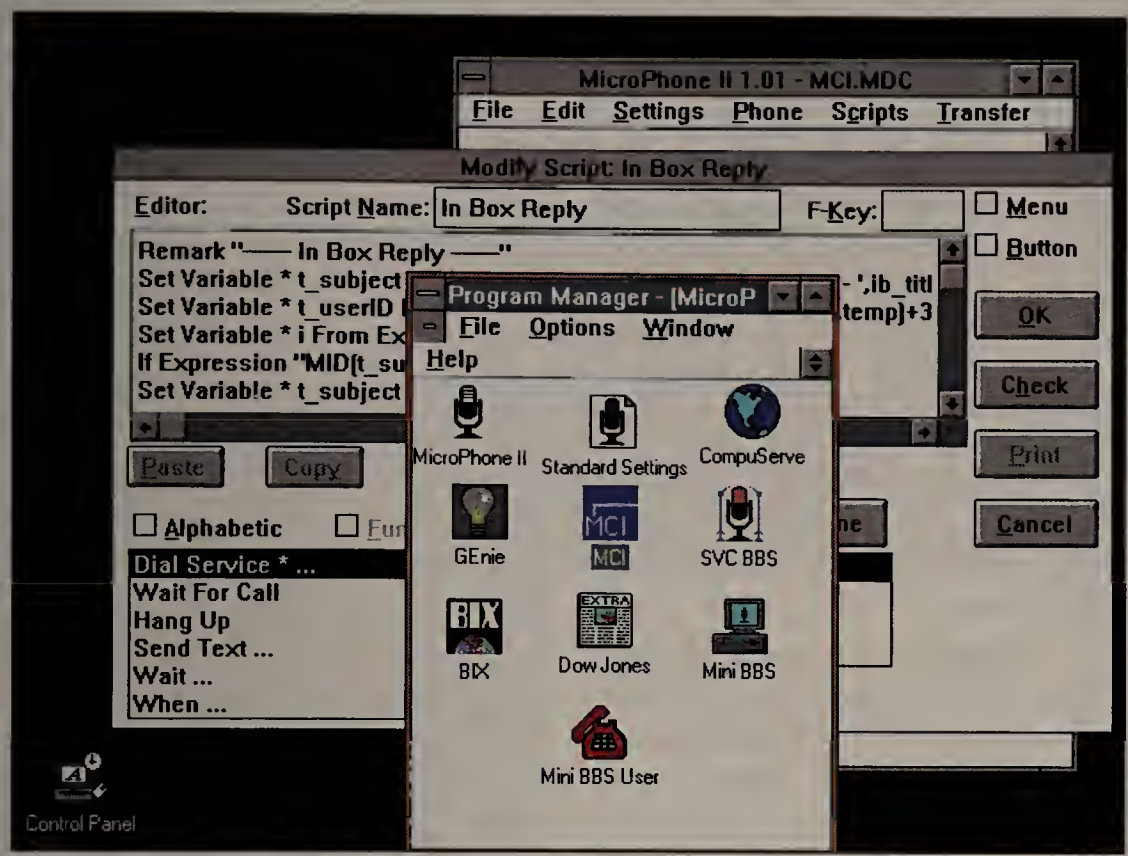
Multitasking To earn an Excellent, a program must offer background transfers. Points are subtracted for unduly large background memory requirements. Points are added for multiple simultaneous modem sessions.

Session automation To earn an Excellent, a program must offer a powerful script language, a learn mode, and keystroke macros. Extra points are added for script-writing tools.

Remote mode To win an Excellent, a program must offer remote menus, multilayer password protection, file transfers, access to DOS, and the ability to limit callers by subdirectory.

Terminal emulations To win an Excellent, a program must offer the basic emulations (VT-100/102/52, ANSI, TTY, IBM 3101) plus at least six more. Points are subtracted for flaws and bugs.

Overall value weighs all the above criteria, with primary emphasis on ease of use and secondary emphasis on messaging and file transfers. It also factors in the price of each package.



Showing the potential of Windows-based communications, MicroPhone II lets you log on by simply clicking on an icon. But first you must struggle with a confusing setup procedure. In the background, MicroPhone II's helpful script editor lets you piece script together from menus.

no support for scrollable lists, and only limited tools for creating dialog boxes. The learn mode doesn't record pauses, so you must enter them manually. One plus: You get a slick script editor that lets you piece scripts together from menus.

MicroPhone has a few rough spots. If you pull down menus during a communications session, *MicroPhone II* sometimes misunderstands modem responses—for example, you might see "Modem not responding" if you open a menu while the modem is hanging up.

With its icon interface, *MicroPhone II* is moving in the right direction, and once set up, it's pretty easy to use. But until the basic functionality is boosted, look elsewhere.

Mirror III 2.0

PROS: Good script language, mouse support

CONS: Some poorly implemented on-line features, peculiar interface

Mirror III began life as a *Crosstalk XVI* clone but has since graduated to become a *Procomm* and a *Crosstalk* clone. The latest version of this $149 program boasts features that its mentors lack, including mouse support, background transfers, and a slew of terminal emulations. However, the program's hodgepodge interface and screen glitches make it a so-so value.

Mirror III's interface couldn't be more schizophrenic—even *Procomm* and *Crosstalk XVI* users will find it disorienting. A ghost of a *Crosstalk XVI* screen flashes on the screen when you load the program, but in a blink it's gone as *Mirror* dresses itself in a *Procomm*-like dialing directory. You use a *Crosstalk XVI*–style status screen to change global parameters and launch scripts and the dialing directory to get on line. Once on line, you choose between a *1-2-3*–issue top-line menu or a *Crosstalk XVI*–style command bar.

The program's screen display is buggy—at times, *Mirror III* blanks the online screen. Log off a mainframe after using VT-220 emulation, and the screen blossoms into a confetti of extended ASCII symbols. The mouse support is welcome, but while on line the mouse occasionally freezes up.

Among *Mirror III*'s other quirks is its curious ritual of stalling several seconds to build menus whenever you log off. File and error handling is poor—when accessing alternate drives (such as D:) you can look only at the root.

Support for transfer protocols is complete except that ZMODEM isn't built-in—you must install it from a separate disk (no picnic) and register it as shareware. The background mode works well, but it consumes 470K, leaving scant room for other programs. You can trim it to 185K if you prune key features like the dialing directory.

Mirror's capable script language is comparable to that of *Procomm Plus*. A mini-BBS greets remote callers with menus and even lets authorized users shell to DOS, but you can't restrict callers to specified directories.

Mirror III offers a wide array of features, but the bumpy interface makes it only a fair value.

Procomm Plus 2.0

PROS: Easy-to-use dioling directory, simple setup, mouse support, good remote mode

CONS: No background transfers, faulty DEC emulations, poor documentation

An up-from-shareware best-seller, *Procomm Plus* has recently undergone its first major upgrade in years. Version 2.0 adds ZMODEM, mouse support, an improved editor, 15 terminal emulations (for a total of 32), and a more powerful script language. On the downside, some DEC emulations still don't work properly, and the documentation is a loser. Thanks to its ease of use, however, *Procomm* retains the Best Buy it won in our last roundup a year and a half ago.

Always easy to use, *Procomm* has become even easier. New fields grace *Procomm*'s intuitive dialing directory, including date of last call, emulation, and protocol. Also new: You can annotate entries with a pop-up notepad. As always, <Alt>-*key* combinations let

you quickly access setup parameters, and you can now use function keys to call scripts and external programs. You get prewritten scripts for CompuServe, Dow Jones, and BIX.

Mouse support is a big help—you can use a mouse to dial numbers and scroll and select choices from menus. While *Procomm*'s script language now boasts its own manual, neither it nor the main manual is very thorough, and expanded on-line help doesn't fill the gap. The new *Procomm* is a memory guzzler, requiring 295K (192K if you sacrifice Kermit, CompuServe B+, the editor, and the DOS gateway).

The on-line interface is improved—you can cut and paste file names between *Procomm* and a remote system, and you can now easily mark on-line text and pop it into a vastly improved editor that includes word wrap and a split-screen display. The addition of ZMODEM and CompuServe B+ brings *Procomm*'s list of protocols up to snuff, and the 15 new emulations include DEC VT-220, VT-320, and IBM 3161. A few DEC emulations still retain flaws, exhibiting faulty backspace and function key behavior.

Procomm's enhanced script language will be welcomed by developers who want to write their own emulations. Scripts are now compiled for greater speed, and the over 90 new commands include better file and string manipulation, support of floating variables, and a full set of arithmetic operators. However, it lacks the windowing power of top languages like *Mk.4*'s CASL. Also, if your existing *Procomm* scripts are complex, they'll probably need to be modified.

Despite some gaps and blemishes, the $119 *Procomm Plus* is still a Best Buy—especially if you buy it from one of the many mail-order outfits that offer it for about $40. It's highly recommended for mainstream users, but if you need to call into the company DEC VAX, choose *HyperAccess/5* instead.

Qmodem SST 4.2

PROS: Good text editor, easy dioling directory, superb remote mode

CONS: No background transfers, few emulotions ond protocols, no predefined scripts

The Forbin Project's shareware *Qmodem SST* is a kissing clone cousin to *Procomm Plus*. The $79.95 program offers an outstanding host mode, dialing directory, and editor. Although its list of emulations and protocols is somewhat short, it's a good value for bargain hunters and BBS browsers.

Qmodem's unique setup automatically tests and optimizes many different brands of high-speed modems. Documentation is mediocre, but the on-line help is tops. Unfortunately, the program lacks prewritten scripts, and there's no background mode.

Like *Procomm*, *Qmodem* is built around an interactive dialing directory, complete with queue dialing for polling busy BBS's, and pop-up notecards for each dialing entry. *Qmodem*'s superb *WordStar*-like editor is the best in the roundup, and cut and paste is easy. On-line support is good, but *Qmodem* can't read Kermit or CompuServe B protocols, and its limited list of emulations lacks IBM 3101 support.

The 68-command script language is similar to the one in *Procomm*, adding true windowing ability, a slick debugger, and a facility to execute DOS commands from within scripts. The BBS-like host mode is the best in the roundup—it has everything that *Procomm* has, plus a

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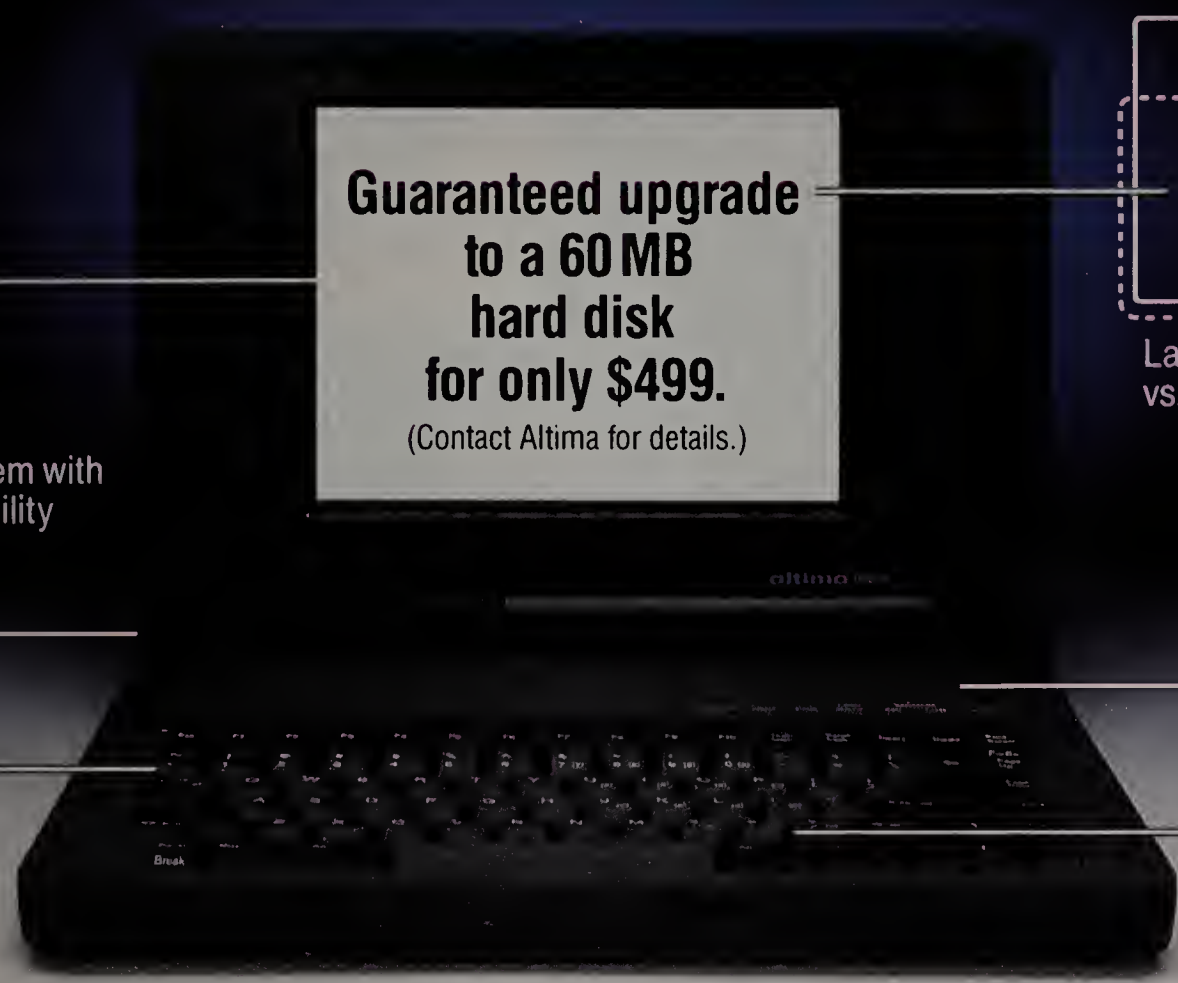

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Qmodem is a good choice for BBS aficionados, as well as for users who want to set up their own simple, easy-to-maintain bulletin board.

Relay Gold 4.0

PROS: Links to *Relay*-based mainframes, multiple sessions, 3270 support

CONS: Confusing interface, poor documentation

Microcom's $299 *Relay Gold* is aimed at corporate users with links to those IBM 3270 and VM systems that also run versions of *Relay*. Version 4.0 adds emulations, expanded memory support, a pop-up scroll buffer, and script enhancements. Despite the program's 15 multiple sessions, support for 3270 boards, and powerful script language, however, *Relay Gold* drops the ball with its poorly organized interface. Now that *Crosstalk Mk.4* proves that power needn't be intimidating, there's scant reason to buy *Relay Gold* unless you're talking to *Relay* mainframes.

Relay Gold is awash in excess menus, and you must often work through a puzzle box of function keys and script commands. The program opens simply enough with a function-key menu, but then things get messy. There's an adequate dialing directory, but you must toggle to another screen to find out, for instance, if an entry is linked to a script.

On line, it gets messier. There are no predefined scripts, so you must rely on *Relay*'s learn mode, which works only with TTY emulation—this double whammy will keep many a novice from creating log-in scripts. To coax *Relay Gold* into printing, you must enter script commands.

Background transfers consume only 256K. They run smoothly when the program is loaded as a non-TSR and later toggled into resident mode, but if you load it in resident mode and then go on line, *Relay* reports that there isn't enough memory and hangs up.

The hefty script language includes plenty of variables and math functions, but it offers no support for windowing, and only one data type. The menuless remote mode accepts calls only from other *Relay* systems.

Relay Gold may be a suitable choice for corporations that link up to mainframes via *Relay*, but for the rest of us, it earns a thumbs-down.

Smartcom III 1.2a

PROS: Good file manager, capable editor, multiple sessions

CONS: Difficult to set up, few emulations, no CompuServe B or ZMODEM

Marred by a confusing interface and limited support for emulations and protocols, the $249 *Smartcom III* probably would not be as widely used as it is if it didn't come bundled with some V-Series Hayes modems. If you want power, check out *Crosstalk Mk.4*. If you're looking for ease of use and want to stay in the *Smartcom* family, try Hayes' new lower-end *Smartcom Exec*.

Smartcom Exec is superior to Smartcom III and only a tad less powerful.

Smartcom III lacks a true dialing directory. Communications settings are broken into two categories: activity settings, which consist of the phone number, emulation, and file transfer particulars, and connection settings, which are parameters like modem speed and COM port. Ideally, you're supposed to mix and match these so you can run multiple activity settings from a single connection setting, but in real life it's a mite confusing, and the limited manual doesn't help. It's also difficult to link a log-in script to a phone number.

Once it's set up, *Smartcom III* gets a little easier. On line, you can open a complete menu of options, including an excellent capture buffer and editor and the best file manager in the roundup. The lack of hot keys, however, results in too much button pushing, and you can't change parameters—or even protocols—while on line.

Smartcom III is oddly out of sync with the modem—it takes 3 to 5 seconds to dial the modem, and a suddenly severed link can leave you temporarily unable to access the main menu.

With two modems, you can run two sessions at once—four sessions if you have two modems linked to an X.25 network. The scantily documented background mode, dubbed "Caveat Emptor," is for "experimental" use only—it's really no different from the DOS shells offered by most of its rivals. If you adjust *Smartcom*'s memory usage, you may be able to run a few small, well-behaved programs during file transfers, but you risk losing the connection.

The script language is comparable to *Procomm*'s. An excellent script editor lets you parse together commands from menus. The limited remote mode offers passwords and a simple menu, but callers can't access DOS.

A nerve-jangling interface, limited emulations, and the lack of ZMODEM make *Smartcom III* a mediocre buy.

Smartcom Exec 1.0a

PROS: Easy to use, mouse support

CONS: Few emulations, no prewritten scripts

A scaled-down version of *Smartcom III* designed for novices, the $129 *Smartcom Exec* is a vast improvement over Hayes' low-end *Smartcom II*, which is being phased out. It's also superior to Smartcom III and only a tad less powerful. The only omissions from *Smartcom III*'s feature list are multiple sessions, data compression, and encryption—items not likely to be missed by most. *Exec*'s Caveat Emptor background mode, remote mode, and paltry emulations are identical to *III*'s, and the script

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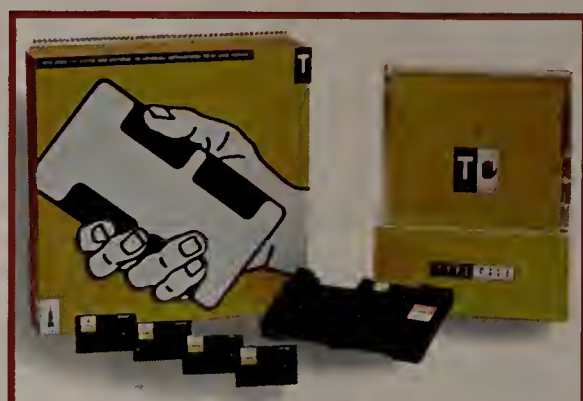

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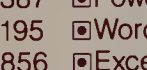

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8162 ▣ ABC Flowcharter 1.1 ..... 189.

Samna ... NCP
5799 ▣ Ami Pro 1.2 ..... 309.

Sitka ... NCP
6675 ☐ TOPS Network Bundle 3.0 ..... 159.
3720 Flashcard 2.1 *(AppleTalk ntwrk. card)* 155.

Softlogic Solutions ... NCP
3542 ☐ Software Carousel 5.0 ..... 55.

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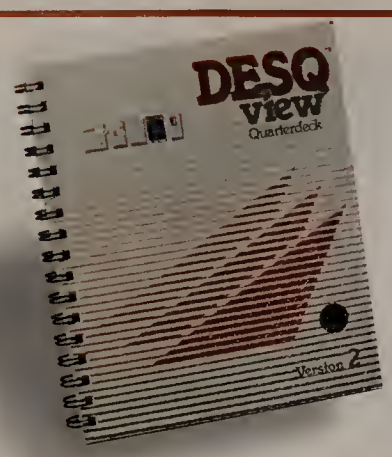

Quarterdeck ... NCP
3220 ☐*DESQView 2.3*–Load multiple applications and easily switch between them without exiting and reloading. An easy way to window your current standard DOS applications. $85.

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3496 ☐Professional Write 2.2 ..... 169.
3482 ☐Harvard Graphics 2.3 ..... 329.
Solution Systems ... NCP
7977 ☐Brief 3.0 *(Programmer's Editor)* . 189.
Spinnaker ... NCP
3478 ☐PFS:First Choice 3.1 ..... 105.
7604 ⊙PLUS for Windows 1.0 ..... 289.
Symantec ... NCP
6397 ⊙The Norton Backup 1.2 ..... 105.
3146 ⊙The Norton Utilities 5.0 ..... 119.
3425 ☐Q&A 3.0 ..... 239.
7999 ⊙Norton Anti-Virus 1.0 ..... 89.
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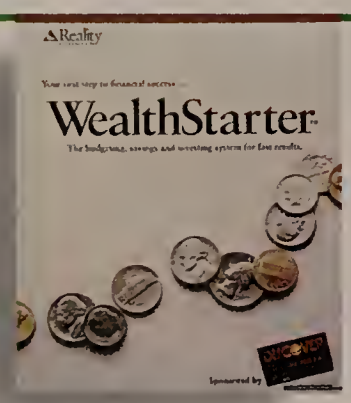
8215 ⊙OutsideIn 1.0 ..... 65.
6564 ☐Software Bridge 4.1 ..... 79.
TIMESLIPS ... NCP
2987 ☐Timeslips III 4.0 ..... 195.
6994 ☐PercentEdge 1.0 ..... 69.
Timeworks ... NCP
6253 ⊙Publish-It! 1.1 ..... 139.
Touchstone Software ... NCP
7420 ⊙Check It 3.0 ..... 89.
Traveling Software ... NCP
5179 ⊙LapLink III 3.0 ..... 95.
Ventura Software (Xerox) ... NCP
7796 ⊙Ventura Publisher for Windows 3.0 569.



Reality Technologies ... NCP
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3804 ☐WordPerfect 5.1 ..... 265.
6685 ⊙DrawPerfect 1.1 ..... 279.
WordStar International ... NCP
6791 ☐WordStar Prof. 6.0 ..... 279.
XTREE ... NCP
6161 ⊙XTree Gold 2.0 ..... 95.

RECREATIONAL/EDUCATIONAL

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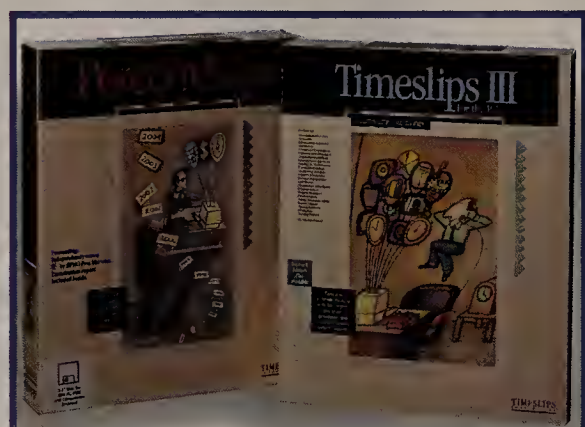
8081 ☐Jack Nicklaus' Unlimited Golf ... 39.
Broderbund ... CP
8068 ⊙Where in the World is Carmen Sandiego Deluxe Edition ..... 52.
5851 ⊙SimCity ..... 33.
8886 ⊙SimEarth ..... 45.
Electronic Arts ... NCP
4534 ⊙Mavis Beacon Teaches Typing *(CP)* 35.
7865 ☐PGA Golf ..... 39.
Harvard Associates ... NCP
2324 ⊡PC Logo 3.0 ..... 59.



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6994 ☐*PercentEdge 1.0*–Calculates mortgages, loans, annuities, present values, & more.. 69.

Microsoft ... NCP
7881 ☐Entertainment Pk for Windows 1.0 29.
2858 ☐Flight Simulator 4.0 ..... 42.
8270 ⊙Aircraft and Scenery Designer 1.0 29.
Microsoft Press (Books)
8126 Running with DOS 4th Edition..... 20.
8129 Running Windows *(2nd Edition)* ... 22.
8136 Running Microsoft Excel ..... 22.
Penton Overseas ... NCP
⊙VocabuLearn/ce Levels I & II (French, Italian, German, Spanish, Russian, Hebrew and Japanese)..... *each* 35.
Sierra ... CP
8146 ⊙Quest for Glory II ..... 39.
7972 ☐King's Quest V *(VGA)* ..... 45.
SirTech. ... CP
8235 ⊙Bane of the Cosmic Forge ..... 39.
Spectrum Holobyte ... NCP
5993 ⊙Welltris ..... 27.
Software Toolworks ... NCP
4659 ⊙Chessmaster 2100 *(CP)* ..... 35.
7372 ☐World Atlas ..... 42.
Stone & Assoc. ... NCP
5231 ⊙Phonics Plus 1.1 ..... 22.
3435 ⊙Letters, Numbers, Words 2.2 .... 22.

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True BASIC, Inc. ... NCP
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7105 Smart UPS 600LS ..... 469.
6811 360SX *(stand-by power source)* ... 219.
7106 520ES *(stand-by power source)* ... 329.
AST Research ... 5 years
1299 SixPakPlus 384k C/S/P ..... 179.
8041 SixPak 286 0k ..... 99.
Boca Research ... 5 years
7001 BOCARAM/AT PLUS *(0-8 Meg)* ... 119.
7061 BOCARAM/XT 0K *(0-2 Meg, LIM 4.0)* 99.
6998 I/O Board for AT ..... 59.
6999 I/O Board for Microchannel *(S/S/P)* 109.
8380 BasicVGA *(256K, 640 x 480)* ..... 69.
8381 SuperVGA *(1 Meg, 1024 x 768)* ... 145.
Bravo Communications ... 2 years
7400 2 Pos. Laser Compatible Switch Box 109.
Brown-Wagh ... 1 year
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Canon ... 1 year
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7358 Command Center ..... 89.
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Epson ... 2 years
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1904 FX-1050 *(136 col., 264 cps, 9 pin)* .. call
5183 LQ-510 *(80 col., 180 cps, 24 pin)* ... call
1930 LQ-850 *(80 col., 264 cps, 24 pin)* .. call
1917 LQ-1050 *(136 col., 264 cps, 24 pin)* call
5184 LX-810 *(80 col., 180 cps, 9 pin)* ... 185.

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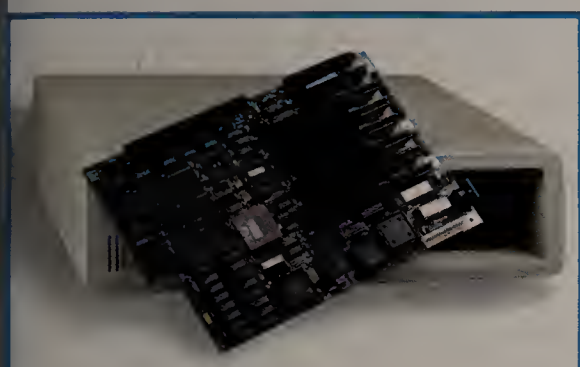

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9032 *20 MHz 386 Motherboard for XT*–Need 386 power, performance, and compatibility? Easily upgrade your PC, XT, AT or true compatible with the Hauppauge Motherboard.
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2307 Smartmodem 2400..... 349.
8049 JT Fax 9600B w/Smartmodem 2400 379.
7391 Ultra 9600 Modem ..... 799.
9192 Ethermate 8 *(ethernet card)*..... 199.

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6582 LaserJet IIP *(with toner)*..... 949.
6754 LaserJet III *(with toner)* ..... 1699.

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6421 2400B MNP Internal Modem .... 199.
4696 2400B Internal Modem..... 149.
5119 2400 Baud External Modem..... 179.
6420 2400EX MNP Modem..... 229.
7880 9600EX Modem..... 549.
2346 Inboard 386/PC with 1 Meg ..... 495.
5336 Above Board Plus 8 2 Meg..... 549.
5342 Above Board Plus 8 I/O 2 Meg ... 569.
7782 SatisFAXtion *(fax board)* ..... 399.
8778 SatisFAXtion for Microchannel ... 449.
8901 Matched Memory 2 Meg *(PS/2)* . . 189.
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2372 80387-20 *(20 MHz 80386 CPU's)*. . 399.
4121 80387-25 *(25 MHz 80386 CPU's)*. . 499.

Kensington Microware ... 1 year
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7899 Expert Mouse *serial* 119. 7900 *bus* 129.

Key tronic ... 3 years
4518 101 Plus Keyboard ..... 99.

Kraft ... 5 years
5800 3 button Thunder Joystick..... 29.
5813 Game Card/Thunderstick Bundle . . 55.
7862 TopTrak *(Laptop Trackball)*..... 75.

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Micron Technology ... 2 years
7595 2 Meg Expansion for HP LaserJet IIP or III..... 159.
7012 Memory Upgrade PS/2 70 - 2 Meg 149.

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2897 Mouse with Paintbrush ..... 105.
2898 Mouse with Windows 3.0 ..... 149.

MicroSpeed ... 1 year
PC-TRAC Trackball
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7271 *Inport* ..... 79. 6330 *PS/2* ..... 79.

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5085 Multisync 3D Monitor ..... 689.

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7863 ProDesigner VGA II with 1 Meg... 329.

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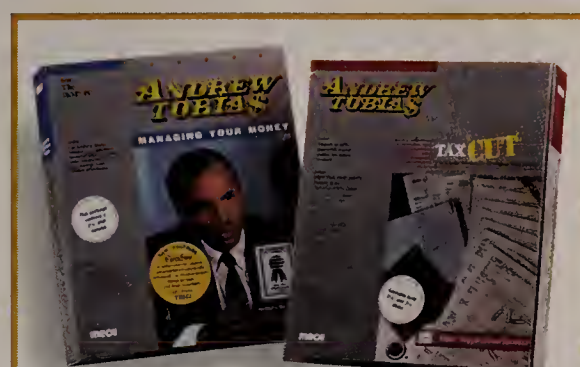
Pacific Data Products ... lifetime
6779 25 Cartridges in One! *(for LJ II, IIP, III)* 275.
8816 PacificType *(40 PostScript Typefaces for PacificPage PE 4.0 users)*..... 275.



MECA ... NCP
8884 ▣*Managing Your Money 7.0 with Tax Cut-1990 Bundle*–Put Andrew Tobias to work for you with the award winning Managing Your Money and Tax Cut in a special bundle. Available while supplies last ..... $129.

8975 Complete Font Library *(for LJIII)* . . 275.
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Practical Peripherals ... 5 years
3100 1200 Baud External Modem..... 75.
3103 2400 Baud Internal Modem ..... 129.
3102 2400 Baud External Modem..... 179.
8993 2400 Baud Int. Modem *(V.42 bis)* . 169.
8994 2400 Baud Ext. Modem *(V.42 bis)*. 209.
4542 2400 Baud Internal Modem for PS/2 229.
8132 PM2400 Pocket Modem..... 109.
7934 PM9600SA Modem ..... 489.

PSION .. 1 year
7086 MC600 Mobile Computer ..... 2149.

Reflection Technology .. 1 year
7127 Private Eye *(virtual display)* ..... 499.

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6747 Safe 400S..... 399.

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6624 BC450 *(450W Battery Backup)* . . . 269.
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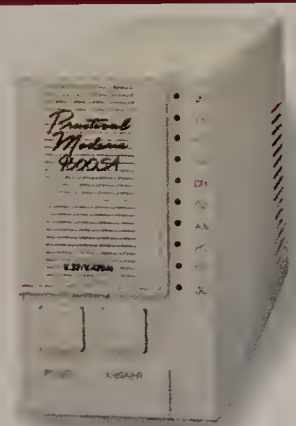
8105 Installation Kit for Standard Bus. . . . 95.
8106 Installation Kit for Microchannel . . 249.



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7934 *PM9600SA Modem*–Practical Peripherals does it again by making communications affordable with their newest modem featuring the data compression & error correction of 9600bps V.32 & V.42bis operation. . . . **$489.**

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6602 1.44 Meg External *(for PC/XT/AT)* . 239.
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4951 720k Drive for PC/XT *(3½")* . . . . . 69.
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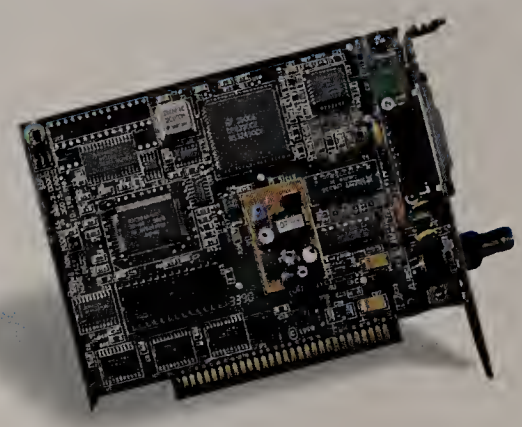
2792 3½" DS/DD 720k Diskettes *(Qty. 10)*. . 13.
2793 3½" DS/HD 1.44Mb Diskettes *(Qty. 10)* 21.



Hayes ... 2 years
9129 *EtherMate 8*–8-bit Ethernet adapter for IBM PC XT/AT, PS/2 Model 25+ 30, and compatibles. Supports Thick Ethernet DB-15 AUI and Thin Ethernet BNC connections **$199.**

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3297 3½" DS/DD 720k Diskettes *(Qty. 10)*. . 12.
3298 3½" DS/HD 1.44Mb Diskettes *(Qty. 10)* 19.
6148 3½" DS/DD *(3 Pack)* . . . . . 29.
6375 3½" DS/HD *(3 Pack)* . . . . . 49.
8185 QD 2040 Tape Cartridge . . . . . 19.
6712 QD 600A Tape Cartridge . . . . . 27.
6715 QD 6150 Tape Cartridge . . . . . 27.
3M ... lifetime
3943 DC 2000 Tape Cartridge . . . . . 20.
6065 DC 2080 Tape Cartridge . . . . . 25.
3944 DC 600 Tape Cartridge . . . . . 29.
5679 DC 6150 Tape Cartridge . . . . . 29.

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6556 256k DRAM *(100 ns, set of 9)* . . . . . call
5510 1 Meg x 9 SIMMs *(80 nanosecond)* call
5746 1 Meg Chips *(80 ns, set of 9)*. . . . . call
7813 256k x 4 Chips . . . . . call

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Microcom ... NCP
7649 ☐ *Virex-PC 1.1*–Effective, comprehensive solution to DOS-based computer viruses **$79.**

6234 ☐ *CarbonCopy Plus 5.2*–Allows you to access and control a remotely located PC. . **119.**

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- For heavy hardware items such as printers, monitors, Bernoulli Boxes, etc. pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
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- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add $3 per order.

Alaska and outside Continental US:
- Call 603/446-7721 for information.

language is similar. Unlike the other package, however, *Smartcom Exec* offers an easy-to-use mousable interface, good documentation, and ZMODEM.

Exec's interface resembles *Smartcom III*'s, but it's far more streamlined and intuitive. Unfortunately, you're limited to setting up only one protocol per on-line system. No prewritten scripts are included, but you can download some from Hayes' toll-free BBS.

Telemate puts communications into windows for the non-Windows world.

There's no CompuServe B support, but like *Procomm, Exec* includes Interrupted ZMODEM—a new high-speed version of the protocol that enables the modem to resume a file transfer where it left off if line noise intrudes.

Smartcom Exec could use a true dialing directory and more emulations, but it's a good deal for beginners.

Telemate 2.11

PROS: Full list of protocols, mousable windowing interface

CONS: No background mode, no remote mode, few emulations, requires 500K RAM, no phone support

The innovative *Telemate* is not a *Windows* program, but it offers a character-based windowing interface and a pop-up *Windows*-like clipboard for cut and paste. This shareware prodigy costs only $40, but you must print the manual yourself. *Telemate* has its problems, including negligible emulations and no remote mode, but thanks to its friendly interface it's still a very good deal.

A sleek setup routine opens *Telemate*. You access all functions, including the dialing directory, via cascading pulldown menus. The outstanding editor, file viewer, and other modules pop up in windows. You can zoom, move, or resize the windows and shuffle data between them. You can even work in windows during file transfers, but only within the program—there's no background mode.

The Pascal-like script language is well structured and well documented. It lacks trace and debug, but it offers numerous data types and unlimited string and integer variables.

Telemate needs to go on a RAM diet—if you have extended or expanded memory, though, you can reduce some of the whopping 500K RAM consumption. It's the only program reviewed that lacks telephone technical support—you must contact the author via E-mail.

Telemate puts communications into windows for the non-*Windows* world. Despite its limitations, it is impossible not to recommend this wonder to adventurous users who are hooked on the mouse but not on *Windows*.

Unicom 2.0c

PROS: Easy dialing directory, powerful on-screen buttons

CONS: No learn mode, limited script language, no DDE support

The only *Windows* program reviewed that offers a *Procomm*-like dialing directory, the shareware *Unicom* is also the easiest to use. The $60 *Unicom* is such a pleasure, you may want to ignore its underachieving script language and lack of a learn mode and buy it anyway.

Unicom offers the usual pulldown menus, one of which runs such *Windows* utilities as the Calculator, Calendar, and Notepad. Three rows of buttons on the bottom invoke communications chores like dialing, hanging up, uploading, and downloading. You can customize the bottom two rows to launch scripts or external programs. This high level of integration makes the lack of DDE support less onerous. On line, you can shuttle to the clipboard the contents of the capture buffer or the terminal window, but you can't mark and cut the text before doing so. *Unicom* offers an impressive list of protocols, but emulations are limited to TTY, ANSI, and VT-100.

Unicom's script language is the most limited in the roundup. It's good for writing log-ins, but for little else. You can record keystrokes for later playback, but there's no true learn mode. On the plus side, you can schedule script activation using VCR-like buttons, and the remote mode is capable. Tech support, however, is limited to calling the author during 3 hours in the evening or contacting him on CompuServe.

Unicom has its shortcomings, but a friendly design makes communications straightforward. It's a good deal for the casual *Windows* communicator.

Windows Communications—Not Quite Ready for Prime Time

Windows holds the promise of making on-line access easier—icons, buttons, and dialog boxes can smooth the rough edges of on-line life, and multitasking, the Clipboard, and DDE support can better integrate communications with other applications.

If only the reality lived up to the promise! *Windows* communications packages—especially *DynaComm* and *MicroPhone*—have made innovative strides, but their fancy iconic interfaces are even more difficult to set up than a standard communications package.

For now, the easiest, most complete communications solutions are still found in the character-based world. Our Best Buys: *Crosstalk Mk.4* for high-end users, *HyperAccess/5* or *Procomm Plus* for more casual users, and *Crosstalk Communicator* for beginners.

Undoubtedly, the *Windows* packages will mature, and next year they may rise to the top. The potential is great.

Judy Heim is a contributing editor for PC World. *Additional research provided by John Heim.*

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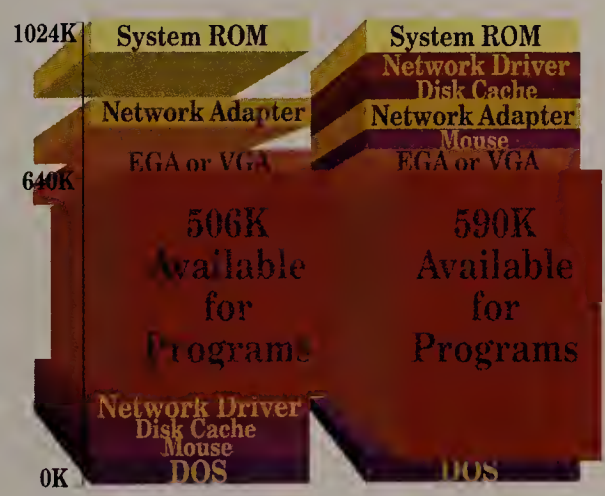

Before *After*

Unused memory is like hidden gold in your PC. QEMM finds it and makes it available.

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QEMM-386 System Requirements: 80386-based PCs and PS/2s and PCs with 80386 add-in boards. Operating system: PC DOS 2.0-4.0, MS DOS 2.0-4.0, Windows 3.0. Conventional memory requirement 1.5K.
DESQview System Requirements: IBM Personal Computer and 100% compatibles (with 8086, 8088, 80286, 80386 or i486 processors) with monochrome or color display; IBM Personal System/2 • Memory: 640K recommended; for DESQview itself 0-155K • Expanded Memory (Optional): expanded memory boards compatible with the Intel AboveBoard; enhanced expanded memory boards compatible with the AST RAMpage; EMS 4.0 expanded memory boards • Disk: two diskette drives or one diskette drive and a hard disk • Graphics Card (Optional): Hercules, IBM Color/Graphics (CGA). IBM Enhanced Graphics (EGA), IBM PS/2 Advanced Graphics (VGA) • Mouse (Optional): Mouse Systems, Microsoft and compatibles • Modem for Auto-Dialer (Optional): Hayes or compatible • Operating System: PC-DOS 2.0-4.0; MS-DOS 2.0-4.0 • Software: Most PC-DOS and MS-DOS programs; programs specific to Microsoft Windows 1.03-3.0, GEM 1.1-3.0, IBM TopView 1.1 • Media: DESQview is available on either 5-1/4" or 3-1/2" floppy diskette.

Trademarks: Windows, MS-DOS: Microsoft Corporation; PS/2, Interleaf, TopView: IBM Corporation; 80386, i486, AboveBoard: Intel Corporation; 1-2-3: Lotus Development Corporation, AutoCAD 386: Autodesk, Inc; RAMpage: AST Research; Hercules; Mouse Systems; Hayes; GEM, Digital Research, Inc.

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Crosstalk Mk.4 2.0
Digital Communication Associates
1000 Alderman Dr.
Alpharetta, GA 30202
800/241-4762
LIST PRICE: $245
REQUIREMENTS: 320K RAM, DOS 2.1 or later version, two high-density floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M–F 8:30–8
OTHER SUPPORT: company BBS, CompuServe forum
Reader service no. 612

Crosstalk Communicator
Digital Communication Associates
LIST PRICE: $99
REQUIREMENTS: 320K RAM, DOS 2.1 or later version, one high-density floppy drive or hard disk
TECHNICAL SUPPORT: same as for Crosstalk Mk.4
OTHER SUPPORT: same as for Crosstalk Mk.4
Reader service no. 613

Crosstalk for Windows 1.1
Digital Communication Associates
LIST PRICE: $195
REQUIREMENTS: 150K RAM, Windows/286, Windows/386 2.0 or later version, or Windows 3.0; hard disk, graphics display; mouse recommended
TECHNICAL SUPPORT: same as for Crosstalk Mk.4
OTHER SUPPORT: same as for Crosstalk Mk.4
Reader service no. 614

DynaComm 3.0a
Future Soft Engineering, Inc.
1001 S. Dairy Ashford, #101
Houston, TX 77077
713/496-9400, 713/496-1090 (fax)
LIST PRICE: $295
REQUIREMENTS: 150K RAM, Windows 2.11 or 3.0, DOS 3.0 or later version (DOS 4.0 not recommended), graphics display
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: CompuServe forum
Reader service no. 615

HyperAccess/5 1.1
Hilgraeve Inc.
Genesis Centre
111 Conant Ave., Ste. A
Monroe, MI 48161
800/826-2760, 313/243-0645 (fax)
LIST PRICE: DOS version $99.95, DOS and OS/2 versions $199
REQUIREMENTS: 350K RAM, DOS 2.0 or later version, two floppy drives; hard disk recommended
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–6
OTHER SUPPORT: company BBS, BIX forum
Reader service no. 616

MicroPhone II 1.0
Software Ventures Corp.
2907 Claremont Ave.
Berkeley, CA 94705
415/644-3232
LIST PRICE: $295
REQUIREMENTS: 256K RAM, Windows 2.1 or later version, DOS 3.3 or later version, hard disk, graphics display
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–4:30
OTHER SUPPORT: company BBS; BIX, CompuServe, GEnie forums
Reader service no. 617

Mirror III 2.0
SoftKlone
327 Office Plaza Dr. #100
Tallahassee, FL 32301
800/634-8670
LIST PRICE: $149
REQUIREMENTS: 470K RAM, DOS 2.0 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–6
OTHER SUPPORT: company BBS, CompuServe forum
Reader service no. 618

Procomm Plus 2.0
Datastorm Technologies, Inc.
3212 Lemone Blvd.
Columbia, MO 65201
314/443-3282, 314/875-0595 (fax), 314/875-0503 (BBS)
LIST PRICE: $119
REQUIREMENTS: 295K, DOS 2.0 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: company BBS, CompuServe and GEnie forums
Reader service no. 619

Qmodem SST 4.2
The Forbin Project, Inc.
P.O. Box 702
Cedar Falls, IA 50613
319/266-0543, 319/266-1203 (fax), 319/266-0540 (BBS)
LIST PRICE: $79.95 with documentation, $30 for shareware registration
REQUIREMENTS: 320K RAM, DOS 3.2 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M–F 1–5
OTHER SUPPORT: company BBS, GEnie forum
Reader service no. 620

Relay Gold 4.0
Microcom, Inc.
500 River Ridge Dr.
Norwood, MA 02062
800/822-8224, 617/551-1021 (fax)
LIST PRICE: $299
REQUIREMENT: 192K RAM minimum, 256K suggested, DOS 2.0 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M–F 8:30–7
OTHER SUPPORT: company BBS
Reader service no. 621

Smartcom III 1.2a
Hayes Microcomputer Products, Inc.
5835 Peachtree Corners E
Norcross, GA 30092
404/449-8791, 800/444-2937 (BBS-GA), 800/874-2937 (BBS-US)
LIST PRICE: $249
REQUIREMENTS: 512K RAM, DOS 2.0 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–6
OTHER SUPPORT: GEnie forum, toll-free company BBS
Reader service no. 622

Smartcom Exec 1.0a
Hayes Microcomputer Products, Inc.
LIST PRICE: $129
REQUIREMENTS: same as for Smartcom III
TECHNICAL SUPPORT: same as for Smartcom III
OTHER SUPPORT: same as for Smartcom III
Reader service no. 623

Telemate 2.11
Tsung Hu
P.O. Box 938, Unit 105
St. Catharines, Ontario
L2R 6Z4 Canada
416/682-2342 (fax)
LIST PRICE: $40, documentation comes on disk
REQUIREMENTS: 500K RAM, DOS 3.0 or later version, two floppy drives or hard disk
TECHNICAL SUPPORT: support directly from author through CompuServe, three BBS's, and three BBS message echos including Smartnet, Relay Net, and FidoNet
OTHER SUPPORT: none
Reader service no. 624

Unicom 2.0c
Data Graphics
P.O. Box 46354
Seattle, WA 98146
206/932-8871
LIST PRICE: $60 ($45 for shareware license, $5 for disk, $10 for manual)
REQUIREMENTS: 120K, Windows 3.0, graphics display
TECHNICAL SUPPORT: unlimited, toll number, M–F 6–9 p.m
OTHER SUPPORT: support directly from author through CompuServe
Reader service no. 625

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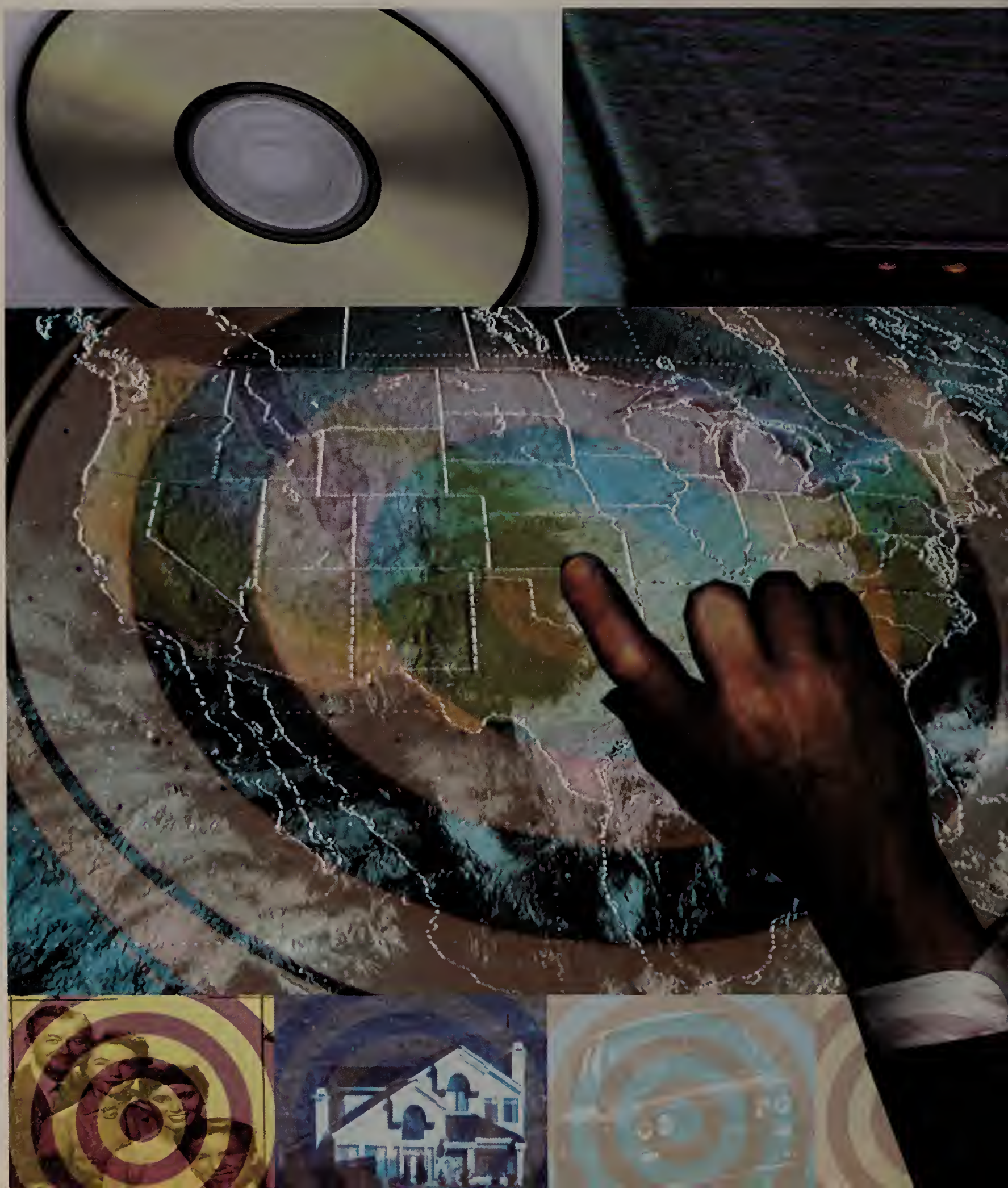


LAX SYNTAX

MARKET!

Information isn't just power—in some cases, it's survival. Before you launch a new product or service, discover how other businesses are ensuring success with on-line and CD ROM data bases of key demographic and competitive data.

Primare Incorporated epitomizes what can happen to the American Small Business Dream. Located in La Mirada, California, a town 30 miles east of Los Angeles, the interior design firm started with just two employees in 1983. By 1988 the company had moved to plush offices in Santa Monica and increased its staff to ten. Then came a budget crunch among health care providers—the clients Primare had spent its marketing time and money wooing. At the same time, new jobs were won by rival firms that kept expenses low by hiring designers on a per-job basis.

By 1989 Primare was barely afloat. "We're still fighting back from doing too little market research too late," laments Alane West, a principal with the firm.

Primare's story is not unusual, says Tom Gray, a chief economist with the Small Business Administration (SBA) in Washington, D.C. According to the SBA, 51 percent of all new businesses fail within four years due to poor management and poor market planning. Companies don't fully research the market before introducing products. They don't understand who their competitors are. And they don't anticipate market changes in time to refocus their business plan.

But the tool that could help companies investigate potential customers or get the scoop on competitors is close at hand: the PC.

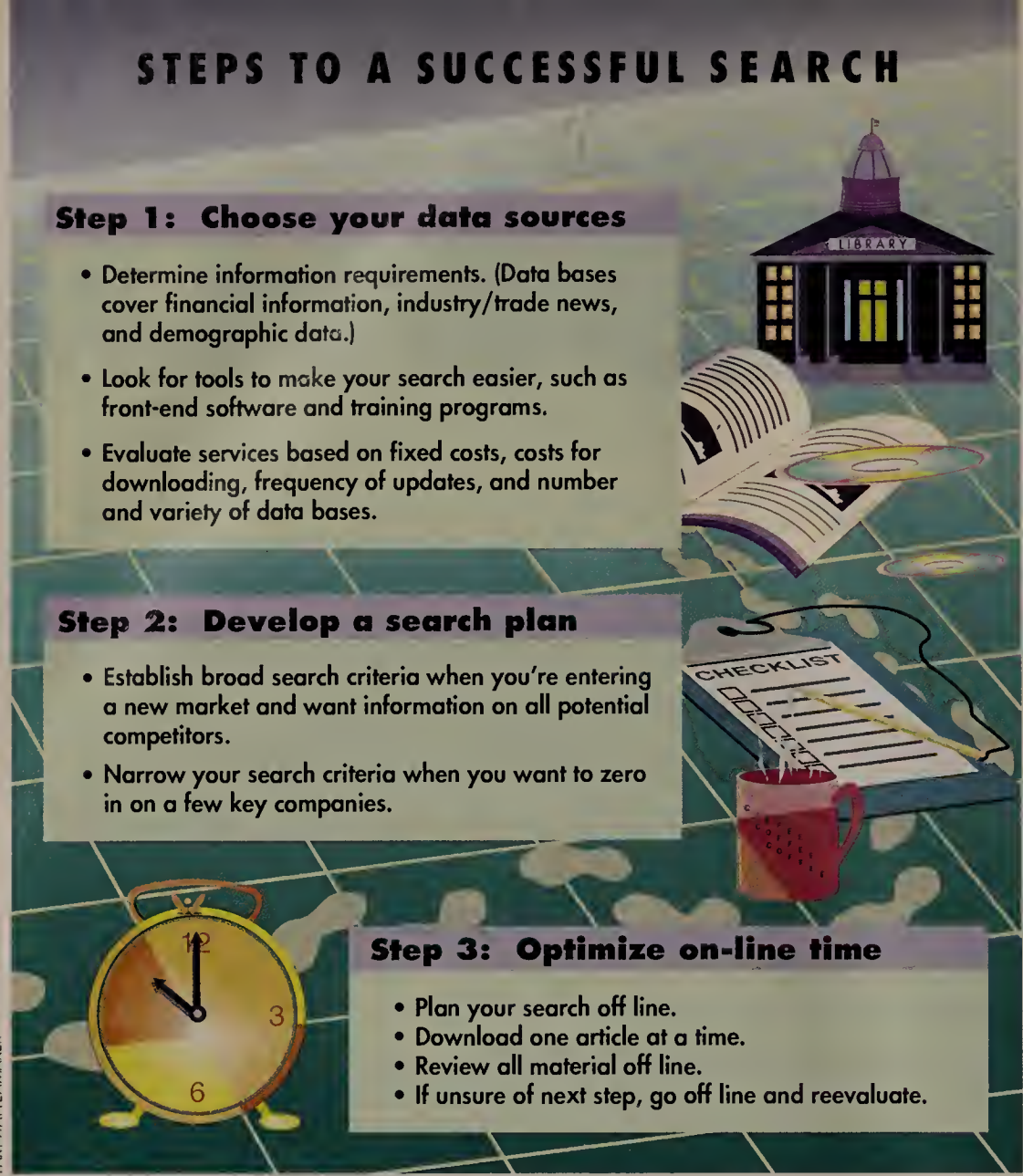
A RARELY USED WEAPON

Although most small businesses use PCs, few are aware of their potential as marketing tools. In a 1990 SBA survey of 2000 businesses, nearly 75 percent of the respondents had PCs. But none of these companies reported using their PCs for market research. That's unfortunate, since using electronic resources would put firms on an equal footing with larger competitors, says Gray.

Virtually all the "textbook" market research required to launch a product or service can be done today with just a PC and modem or CD ROM drive, says Jeffry Timmons, professor of entrepreneurial finance at Harvard Business School.

By accessing commercially available data bases, you can get the lowdown on a competitor's sales, profit and loss history, R&D plans, credit history, contracts and affiliations, organizational structure, intellectual property, and more—all useful information when formulating a business plan for a new venture.

LAURA LANG



PAM WATTENMAKER

A TRIED-AND-TRUE METHOD

The ability to search on-line and CD ROM data bases with PCs isn't new. Such data collection and analysis has been going on at companies like Coca-Cola in Atlanta for years. "We wouldn't launch any new product without first researching who will buy it and what other products they buy," says Terry Koch, the company's director of market research.

The switch is that access to the wealth of publicly available data is now within reach of small companies as well, says Julie Scofield, director of education for the Smaller Business Association of New England (SBANE), a private non-profit association of 2000 small companies. She notes that PC prices have decreased and data bases are easier to access, which makes the information accessible to smaller companies that previously couldn't afford to hire an outside marketing firm or set up an in-house staff dedicated to market research. "With PCs, the owner, the secretary, or anybody else can conduct market research," she says.

ENDING THE PAPER CHASE

Most business executives are familiar with the paper-based reference sources specific to their industries. What they may not know, however, is that many of these same references are available on CD ROM disks or through on-line subscription services.

Data bases range from the industry-specific to those of general business interest. Many popular on-line data bases are available through data banks—on-line "supermarkets" of information, such as BRS, Nexis, Orbit Search Services, and Dialog (see "Strategic Data Sources" in this issue). These business data banks often offer one-stop shopping for the market researcher, since many provide access to hundreds of individual data bases. Dialog, the largest data bank, has 380, many of which are also published on CD ROM.

Usage rates vary considerably from one data base to the next, with some charging fees as high as $200 or more an hour. Users generally pay for on-line time, telecommunications charges, and products ordered, such as a hard copy printout of a report.

Since several of the major data bases are available through a variety of sources, it pays to find the best price. The Disclosure data base, for example, which provides detailed financial information on publicly held companies, is available through Dialog, BRS, and Nexis. On Dialog and BRS the data is updated weekly and costs $45 per hour. On Nexis, the same data base costs $39 per hour.

In addition to on-line data, about 1000 data bases are published on CD ROM, mostly by government agencies. SilverPlatter Information, in Newton Lower Falls, Massachusetts, is one of the most comprehensive commercial distributors of CD ROM data, with 60 titles in its 1991 catalog. CD ROM disks cost anywhere from $29 to more than $10,000 and are sold through computer stores and consultants and by mail order. Some data bases are available only on CD ROM.

The media type you choose will depend on what information you need and how often you'll search, says Bill Perry, director of research at Helgerson Associates, a market research firm in Boulder, Colorado.

When data bases won't be used frequently, it's generally less expensive to use the on-line versions. "On-line data bases are easier to access and have up-to-the-minute information," explains Nancy Herther, editor of the magazine *CD ROM Professional.* When information will be needed more frequently, though, she advises users to compare CD ROM prices. "With CD ROM, you can use the information year-round, keep it running day and night, and look at as much as you want," says Herther. The one disadvantage to using CD ROM data bases is that they are updated much less frequently than their on-line counterparts.

Perry urges consumers to compare CD ROM and on-line data bases by both cost *and* stress factors. "With CD ROM, you won't rush. On-line users are conscious of the ticking clock."

EVERYTHING YOU NEED TO KNOW—BUT YOU'LL HAVE TO LOOK FOR IT

Most businesses have three key questions when launching a product or expanding their business into new territory: Is there a market for my product or service? Will the necessary suppliers be available? Who are my competitors?

The answer to each of these questions is available through on-line and CD ROM data bases—but finding the information can take some digging.

"The hot information, the true intelligence, has to be sifted for," says Kirk Tyson, president of Kirk Tyson International, an Oak Brook, Illinois, market research firm specializing in competitor intelligence. He estimates that 80 percent of the information available through these resources falls into the nice-to-know, but not strategically necessary, category.

Often, in fact, truly strategic information may not exist in the published sources. What you will find, however, are clues about which direction a market is moving, what specific products or services a company will introduce, and what technologies are being developed that will yield new products.

To get a complete picture, Tyson suggests studying multiple sources and talking with lots of people, effectively "putting together the pieces of a jigsaw puzzle." Strategic information should be confirmed by two or three sources before you act on it, he cautions.

"It's amazing how much we can find out using only commercially available data bases," says Earnest Deadwyler, manager of market research for Texas Instruments in Dallas. He uses on-line data bases to compile detailed corporate information on competitors: how they're organized, their financial commitments, labor relations information, and product news.

WHERE TO GO FOR DATA

To research publicly held companies,

FACING OFF WITH COMPETITORS

Anna Maria DiCicco faces formidable competition every day—the faces of celebrities-turned-gourmet-cooks Paul Newman and Frank Sinatra, for starters. The ambitious 26-year-old owns six Italian restaurants in Northern California and markets three sauces (spicy, regular, and marinara) to 680 upscale grocery stores.

We asked Bill Perry, director of research at Helgerson Associates in Falls Church, Virginia, a CD ROM clearinghouse specializing in market research, how DiCicco could use her PC to research new outlets for her sauce. Here's what he said.

First, using Dun's Electronic Yellow Pages, DiCicco could locate grocery stores within a defined area. She would then delete the names of stores already selling her products and concentrate on learning more about potential outlets.

The *Census Bureau STF* would be a good source for researching the demographic makeup of the neighborhoods surrounding each store. Since her sauce sells for about $3 and is labeled to appeal to a gourmet audience (it usually shares shelf space with Newman's Own and Classico), she would need to target stores in middle- to upper-class neighborhoods. With the names and addresses of these stores, she would then use Dun's Electronic Yellow Pages to get contact names and other information (ownership, financial status) for each store.

Next, DiCicco might want to see how competitive products were selling at these outlets, how competing firms were organized, and what product areas they were researching. To find that information, she'd enter product names into Thomas Register Online, which has 50,000 classes of products made by 140,000 companies. The company names could then be used to look for announcements, promotions, or recent patents, for instance. Full text of any relevant articles about those companies could be accessed through Trade & Industry Index or other news data bases for downloading to her PC.

"Everything [DiCicco] wants is readily available—it's just a matter of sifting through the data bases to find the information," says Perry. —*L. L.*

On-line data bases have the information Anna Maria DiCicco needs to research the market for her spaghetti sauce.

ANDY FREEBERG

you can use Disclosure or Standard & Poor's Register-Corporate. Wasserstein Perella and Company, a 250-person investment banking firm based in New York City, uses Disclosure to "screen" clients and competitors for acquisitions and mergers. Large corporations with net worths of $500,000 or more are in Dun & Bradstreet's Million Dollar Directory, while both public and privately held businesses of all sizes are listed in Dun's Electronic Yellow Pages. Current articles on products, promotions, and earnings can be found on Moody's Corporate News—U.S., Newsearch, or Newswire ASAP.

You can use these same resources to find information on potential suppliers, including names of key executives, a company's financial status, and current contracts. Texas Instruments, for example, uses S&P's Register and Disclosure to research suppliers and companies that want to team up with them on a contract. "We use the data to evaluate current work loads and contracts to see if they're overcommitted," explains Deadwyler.

The long arm of on-line electronic data even reaches consumers. Dun & Bradstreet's Donnelly Demographics gives information on age, gender, race, occupation, marital status, household size, education, income level, and so on, down to the ZIP code level. Using address and telephone directory lists, businesses can then get house-by-house addresses and even unlisted telephone numbers for use in direct marketing campaigns.

As the recent storm of controversy surrounding Lotus Development's now-discontinued *Marketplace* products illustrates, however, the widespread availability of detailed consumer information for direct marketing purposes raises serious concerns about individual privacy rights (see *Consumer Watch* in this issue).

This year for the first time, consumer data will be available on CD ROM. The Census Bureau is now releasing its Summary Tape Files (STF) series, based on the 1990 census. The two products most useful for demographic research won't be available for another year or so, however. STF 3 will provide the sample data (gathered from detailed questionnaires given to some houses) down to the block/group level (city

PUTTING DEMOGRAPHIC DATA ON THE MAP

M&T Bank, with 79 branch outlets in western New York state, faces stiff competition in its retail areas, so it relies on demographic data from the National Planning Data Corporation and CACI (both based in Washington, D.C.) to analyze fluctuating business. It has long used such data to locate new offices, understand performance levels, and target a branch's services. But the bank's recent conversion to mapping software to plot the demographic data on maps makes its analysis of population trends more timely, more precise, and just plain easier.

One use for demographic data is in scouting out new branch locations, according to Lew-Jean King, project manager for the bank's delivery systems group. "We look at a neighborhood's loan and savings potential based on the number of households and the area's demographic makeup—particularly income and age," says King. With those figures, his department determines deposit and loan potentials on a neighborhood-by-neighborhood basis. "Without this kind of specific information we couldn't make a case for opening a new branch," he says.

The information is also used to research why existing branches aren't performing as they have in the past. King develops a profile for each branch area based on the competition and on its demographics. "By looking at how an area has changed demographically and projecting how it will change during the next five years, we tailor our services to attract the area's customers," explains King. The bank is most concerned with income and household growth information for each area. "We want to know if we're being too optimistic about credit card lending in an area with a high percentage of elderly people, or about CD balances in lower-income areas. We'd make adjustments in the expectations of those offices."

The bank also sets up direct-mail programs for its products that should be strong in each area. For instance, a neighborhood with first-time homeowners might receive mailings about the bank's home-loan and refinance plans.

For at least 20 years, researchers gathered this data manu-

"I'd be blind without up-to-date demographic data," says M&T Bank's Lew-Jean King. He uses mapping software to display and analyze the information.

TIM PETERS

blocks covering 800 to 1000 people). It will list averages for income, occupation, education, and more. STF 3B (scheduled for release in early 1993) includes all the same information, plus ZIP code data. Pricing will vary, depending on the size of the geographic area you want to study. Full demographic information on California, for example, will cost approximately $830 (final pricing has yet to be determined). Information is available on CD ROM and through the federal government.

Census data holds the greatest potential for direct marketers of products or services. Producers of a new gourmet baby food, for example, could target its introduction at high-income areas, with direct mailings sent to families with young children. And when combined

MANEULLO PAGANELLI

On-line searches are easy if you know the strategy, says Unisys's Suzanne Swenson.

ally by sifting through demographic information compiled by the National Planning Data Corporation and CACI. The NPDC provides base maps, which are reference maps of the geography of a city or a block. CACI offers age, population, and race and income data, and projects demographic changes that will happen between the census counts.

But the bank was able to estimate only the relationships between the base map and the demographic information. It had no way to match the demographic information with the geographic data to make a map showing, for instance, decline and growth areas for average household income.

In the mid-1980s, CACI began distributing its resources in 1-2-3–compatible formats, which made it easy for M&T Bank to analyze and manipulate the statistics. The analysis process, however, wasn't fully automated until 1989, when the bank adopted *Atlas-GIS,* a PC-based mapping product from Strategic Mapping. *Atlas-GIS* uses the Census Bureau's computerized street maps of the country to match addresses with latitude/longitude coordinates and then attach data to those points on the map. An internal data base gives the software its analysis capabilities, while drawing and editing features allow you to create and modify the computerized maps. Pop-up menus and on-screen windowing simplify the user interface.

With *Atlas-GIS,* the bank started to analyze its demographic data on line, combining it with geographic data on specific metropolitan areas like Rochester and Long Island. The mapping software shows bank branches, nearby shopping centers, highways and roads, and outlines of census block groups within the metropolitan area. On-line data, which is updated monthly, is downloaded from either of the two data bases or from the bank's own mainframe data base of customer information. It is then passed directly into *Atlas-GIS* as an ASCII file for mapping and analysis.

Using the mapping software allows the bank to highlight geographic areas for study and view data plotted on a map rather than as columns of numbers. For instance, the software might display concentrations of customers of a specified age or income level, making it easy for an analyst to track and interpret demographic trends at a glance.

King says that M&T plans to make full use of the Census data disks as they become available, since they will be "the most current, realistic data set around." King will use the CD ROM version of the data for his state.

"We're finding that up-to-date demographics make a big difference in how well we are meeting the savings and loan needs of our customers—now and in the future," he says. "I'd be blind without it, with no idea of how to assess an area or how our branches should be doing there," he says. —*L. L.*

with a desktop mapping package or PC geographic information system, which displays demographic data on maps, the data can be used to highlight new areas of opportunity, based on such information as income levels or household profiles (see the sidebar "Putting Demographic Data on the Map").

SIMPLIFYING YOUR SEARCH

The sheer volume of data available scares away many small companies, says SBANE's Scofield. Once on line, businesses fear navigating the data bank's user interface and being unable to locate the information they need.

To alleviate those concerns, most resources have "front end" software to help users develop and conduct searches. For example, *Nexis News Plus* ($50), a front end for Nexis, creates search patterns on keywords such as company names. As keywords are located, data is flagged and downloaded to the user. Front ends such as *Nexis News Plus* are sometimes bundled with the system or may cost from $50 to more than $500 as stand-alone packages.

Large data banks also offer software and seminars to teach new users how to formulate productive searches. Dialog, for example, offers Starter Package programs, which include reference manuals, user seminars, and $100 worth of search time—all for $150. Tyson says with about a half-day's training, most subscribers are able to conduct effective searches.

Suzanne Swenson, manager of market research at Unisys Defense Systems in McLean, Virginia, attended a local Dialog user seminar to learn the basic search strategy. "Once I learned to conduct on-line searches, I could move easily from one data base to the next," she says, noting that each data base offered through Dialog follows the same format, so searching patterns are uniform.

To make the most of search time, users should establish search plans before accessing either type of data base, says Tyson. Searches should start on a general note and then narrow in focus. "Don't search at a too-specific level," Tyson says. "It's better to use broad industry names or technology types." Broader searches identify existing and new competitors—crossovers from other vertical markets that could escape a narrow search of one technology type. For example, searching for *oil industry/pumps* would update a company on what its suppliers or competitors were doing. Searching for *pumps* would also generate information about a manufacturer in another industry who was going to market a pump to oil companies in the near future.

WHEN YOU CAN'T DO IT YOURSELF

Companies unwilling or unable to conduct their own market research can still take advantage of these data sources by using information brokers. For a fee, a broker will search relevant data bases and compile strategic reports on competitors, suppliers, or customers.

Because of their familiarity with the variety of sources available, brokers can often provide you with full reports in a few days. This may be the easiest way for small companies to capitalize on the available resources, but expect to pay $150 to $350 for a typical project.

Brokers are listed in Houston-based Burwell Enterprises' *Directory of Fee-Based Information Services* ($49.50 plus $3 for postage), which is indexed by geographic area and subject.

GETTING THE WORD OUT

With such a wealth of information available, it's hard to believe that many small companies are still ignoring this valuable resource.

Despite efforts by vendors to simplify the search process, many small business users are scared off by the technology, which could still be easier to use, says SBANE's Scofield. "[Vendors also] need to market themselves to the small-business user."

The time commitment involved in developing and implementing a market research strategy may also deter some small businesses. "Anyone who wants to use these resources has to be willing to invest time to use the system," adds Harvard's Timmons, and for many small businesses, day-to-day operations may take precedence over long-term market research.

Until these data bases become more publicized, small businesses will maintain a healthy skepticism toward them, he adds. "They probably think they're doing a good job right now listening to their customers," he says. "This false security can keep them from seeing warning signs until it's too late—and new products or a market downturn puts them out of business."

Laura Lang is a freelance writer in San Diego, California.

For more information on data bases mentioned in this article, see "Strategic Data Sources" in this issue.

ANN STATES

Coca-Cola wouldn't launch a new product without first researching the market, says Terry Koch.

STRATEGIC DATA SOURCES

On-line and CD ROM data bases offer a wealth of information to help businesses keep up-to-date and plan for the future.

LAX SYNTAX

Nothing remains constant except change. Certainly, all the factors that affect a business—from customer demographics to supplier availability to the overall economic climate—are in a state of continual flux. Data bases available on CD ROM or on line can keep you up-to-date.

Below, we've listed a number of data bases designed to assist the general business user. They include full-text data bases of business publications, data bases of statistical information for and about companies, demographic data based on United States Census information, and business directories. The frequency of updates varies from daily to semiannually.

SUSAN LUSTY AND JOHN WALKENBACH

You can also find hundreds of data bases for more specialized applications—everything from farming to weather to real estate to medicine—which we were unable to list here. One source of information about both general-interest and specialized data bases is *Computer Readable Data Bases: A Directory and Data Sourcebook* from the Gale Research Group in Detroit, Michigan.

Because they tend to be expensive, data bases on CD ROM are best suited to users who need information about a narrow topic on a regular basis. Fees and fee structures vary widely for these data bases. For example, some services will charge a yearly subscription, others

a one-time fee with an additional charge for updates. The disks are usually distributed with a software package to search the CD and retrieve the information you need.

If your market intelligence needs aren't sufficient to warrant purchase of a CD ROM drive, a dial-up service offers a more cost-effective approach. You usually pay a one-time charge for access to the data base and additional fees for time spent on the service. Although these services may be more difficult to use, they offer a much broader range of data bases. The listings below indicate which services carry these data bases.

TEXT DATA BASES

Business Dateline

A compilation of the full text of articles from more than 180 U.S. and Canadian business publications, this service is available on CD ROM and on line. It is updated weekly and can be found on Dialog, Dow Jones News/Retrieval, OCLC Epic, Human Resource Information Network, Nexis, and Vu/Text. UMI/Data Courier, 620 S. Third St., Louisville, KY 40202-2475; 800/626-2823, 502/589-5575 (fax). **Reader service no. 658**

BusinessWire

This service offers the full text of press releases issued by companies, research institutions, universities, and so on, announcing information such as new products, research findings, and financial results. Updated daily, it is available on line from CompuServe Information Systems, Delphi, DialCom, Dialog, Dow Jones News/Retrieval, FYI News, NewsNet, Nexis, and Vu/Text. BusinessWire, 44 Montgomery St. #2185, San Francisco, CA 94104; 800/227-0845, 415/986-4422; 415/788-5335 (fax). **Reader service no. 659**

Consumer Trends Int'l Competitive Intelligence Tracking Service

A bibliographical reference for citations and abstracts from periodical literature on worldwide consumer trends, the service is updated weekly and is available on line via an SIS subscription. Strategic Intelligence Systems Int'l, 404 Park Ave. S #1301, New York, NY 10016-8403; 212/725-4550, 212/725-5954 (fax). **Reader service no. 660**

Dow Jones Business and Finance Report

Offering the full text of published articles from the *National Business and Employment Weekly,* this service is updated weekly. It is available on line from Dialog and Dow Jones News/Retrieval. Dow Jones & Co., Inc., P.O. Box 300, Princeton, NJ 08543-0300; 609/520-4000. **Reader service no. 661**

Newsearch

Newsearch is an index of 4000 current news stories, articles, and book reviews on companies, industries, products, economies, and finance. Updated daily, it is available on line from Dialog and BRS Information Technologies. Information Access, 362 Lakeside Dr., Foster City, CA 94404; 800/227-8431, 415/378-5329 (fax). **Reader service no. 662**

LAX SYNTAX

Trade & Industry Index

An index to 3,800,000 articles on trade, industry, and commerce from more than 1000 trade and industry journals and 60 regional business publications, Travel & Industry Index is updated weekly and is available on CD ROM or on line from Dialog and BRS Information Technologies. Information Access Co., 362 Lakeside Dr., Foster City, CA 94404; 800/227-8431, 415/378-5329 (fax). **Reader service no. 663**

STATISTICAL BUSINESS INFORMATION

BusinessLine

Offering statistical business information on more than 7 million businesses, the service includes two files: BusinessLine Registry lists businesses in geographical areas or custom market areas; BusinessLine Basics lists number of employees, sales volume, and number of businesses in a particular area. It is updated bianually and is available on CD ROM. Donnelley Marketing Information Services (DMIS), 70 Seaview Ave., P. O. Box 10250, Stamford, CT 06904; 800/866-2255. **Reader service no. 664**

Cendata

An economic data base of business patterns in foreign trade, manufacturing, construction, and business, Cendata provides information on such topics as monthly retail sales, building permits, and so on. This service is updated daily and is available on line from Dialog and CompuServe. U.S. Bureau of the Census, Data User Services Division, Washington, D.C. 20233; 301/763-4100. **Reader service no. 665**

Consumer Spending Forecast

This service provides forecasts of U.S personal consumption expenditures, retail sales, and consumer credit. Short-term forecasts are updated monthly, long-term forecasts semiannually. The data base is available on line from WEFA on a subscription basis. The

WEFA Group, 401 City Line Ave., Bala Cynwyd, PA 19004; 215/660-6300, 215/660-6477 (fax). **Reader service no. 666**

Disclosure Database

Disclosure provides approximately 230 financial data items on more than 12,000 publicly owned U.S. companies whose securities are traded on the New York Stock Exchange, the American Stock Exchange, NASDAQ, and the OTC National Market System. Updated monthly, it can be obtained on CD ROM (ask for Compact D/SEC), or on line from BRS Information Technologies, BRS/After Dark, BRS/Colleague, CompuServe, Control Data Corporation Business Information Services, Data-Star, Dow Jones News/Retrieval, Lexis, Quotron Systems, Reuters Historical Information Division, and Warner Computer Systems. Disclosure Inc., 5161 River Rd., Bethesda, MD 20816; 212/581-1414. **Reader service no. 667**

Economic Bulletin Board

Offering current information on the U.S. economy, such as employment figures, gross national product, personal income, and consumer price index, this service is updated daily. It is available on line on a subscription basis. U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22161; 202/377-1986. **Reader service no. 668**

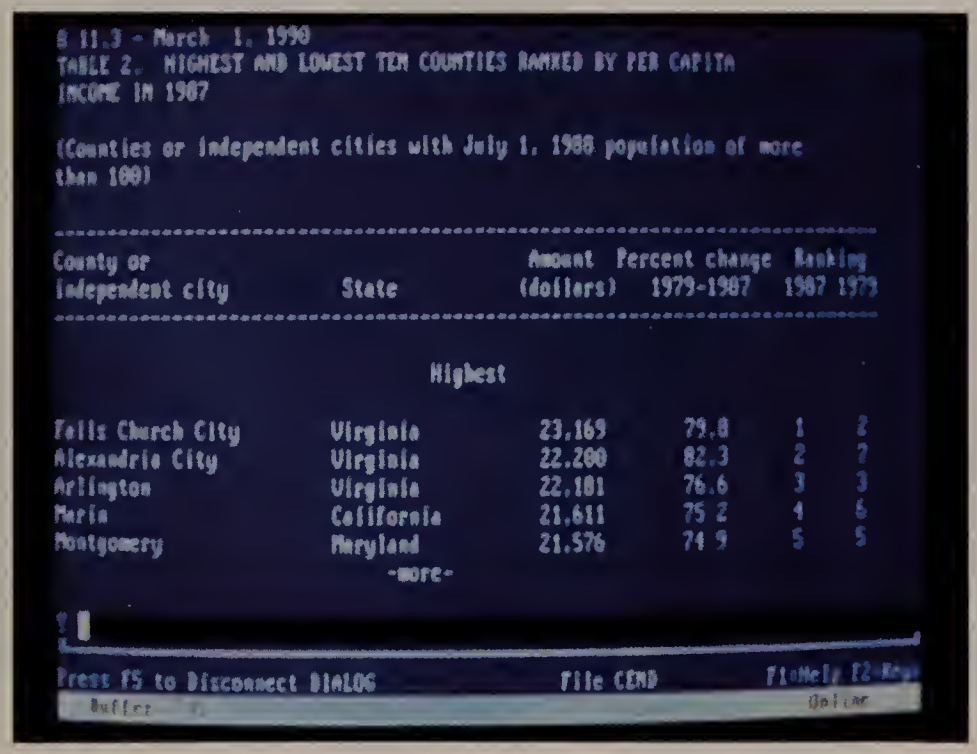
Market Potential

A breakdown of consumer spending patterns at 20 types of retail stores, including furniture, grocery, drug, and variety, Market Potential is updated annually and is available on CD ROM and on line from Dialog. Donnelley Marketing Information Services (DMIS), 70 Seaview Ave., P. O. Box 10250, Stamford, CT 06904; 800/866-2255. **Reader service no. 670**

Moody's 5000 Plus

Current business news and financial information on 13,000 companies listed on the New York Stock Exchange, the American Stock Exchange, and the OTC National Market System is available on CD ROM and is updated quarterly. Moody's Investors Service, Inc., 99 Church St., New York, NY 10007; 800/342-5647, 212/553-0435, 212/553-4700 (fax). **Reader service no. 671**

Business-Wire, available on line, features press releases covering items like new product information and financial news.



Distributed by the U.S. Bureau of the Census, Cendata offers on-line access to economic data on business patterns in the U.S.

Standard & Poor's News

Standard & Poor's News supplies financial and operational information such as interim earnings, management changes, new issues of securities, acquistions, buyouts, and so forth, for more than 12,000 companies. The service is updated daily and is available on line from Dialog, Knowledge Index, Lexis, Nexis, and Mead. Standard & Poor's Corp., 25 Broadway, New York, NY 10004; 212/208-8622. **Reader service no. 672**

DEMOGRAPHIC DATA

Census Projection 1989–1993

This compilation of employment statistics by race and sex for the U.S. as a whole, each state, and Metropolitan Statisticals Areas is available on line from Human Resources Information Network. Woods & Poole Economics, Inc., 1794 Columbia Rd. NW, Washington, D.C., 20009; 202/332-7111. **Reader service no. 673**

County and City Statistics

Demographic and statistical data from the U.S. Bureau of the Census, including 1000 data items for each county, state, and city, is available on CD ROM and updated annually. Slater Hall Information Products (SHIP), 1522 K St. NW #522, Washington, D.C. 20005; 202/682-1350. **Reader service no. 674**

Donnelley Demographics

This statistical data base has five-year projections and current year estimates on population, age, and income, for example, for all U.S. states, counties, etc. Updated annually, it is available on line from Dialog. Donnelley Marketing Information Services, 70 Seaview Ave., P.O. Box 10250, Stamford, CT 06904; 800/866-2255. **Reader service no. 675**

DRI/NPDC County Business Patterns

This service offers U.S county employment statistics at the two- and four-digit SIC code levels from the 1975–1984 County Business Patterns census. It includes annual payroll and distribution of firms by number of employees. The service is updated annually, and it is available on line by subscription. DRI/McGraw-Hill, Data Products Division, 24 Hartwell Ave., Lexington, MA 02173; 800/541-9914, 617/860-6385 (fax). **Reader service no. 676**

FinalFocus

This demographic variable data base is comprised of two files: a geocoding file that includes 1980 census information on various U.S. geographic levels, and a file with 300 demographic variables used to identify and reach target markets. Updated annually, the service is available on line by subscription. LPC, 1200 Roosevelt Rd., Glen Ellyn, IL 60137-6098; 800/624-5377, 708/932-7000, 708/932-0883 (fax). **Reader service no. 677**

MAX Online Demographic Data Management and Reporting System

This service contains more than 1300 census items. It can perform current estimates and five-year projections on population, income, age, and age by income. The service is updated annually, and it is available on line by subscription. National Planning Data Corp. (NPDC), P.O. Box 610, Ithaca, NY 14851-0610; 800/876-6732, 607/273-1266 (fax). **Reader service no. 678**

DIRECTORIES

Dun's Million Dollar Directory

Dun's directory of addresses and financial and marketing information for approximately 160,000 companies with a net worth exceeding $500,000 is updated bimonthly and can be found on line on Dialog. Dun's Marketing Services, 3 Sylvan Way, Parsippany, NJ 07054-3896; 800/526-9018. **Reader service no. 679**

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0116396
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MICROSOFT PRESS
16011 NE 36th Way
PO Box 97017
Redmond, WA  98052

TELEPHONE: 206-882-8080
KING COUNTY      SMSA: 544  (SEATTLE,EVERETT,WASH)

BUSINESS:   Operating systems computer software: application computer
   software: computer peripheral equipment: book publishing.

PRIMARY SIC:    7372          PREPACKAGED SOFTWARE
SECONDARY SIC:  3577          COMPUTER PERIPHERAL EQUIPMENT, NEC
SECONDARY SIC:  2731          BOOK PUBLISHING

YEAR STARTED:                 1975

SALES:                        $591,000,000
EMPLOYEES HERE:               1,200
EMPLOYEES TOTAL:              2,790
```

Addresses and financial information about firms whose net worth exceeds $500,000 is available on Dun's Million Dollar Directory.

Thomas Register

Providing information on what is made in the U.S., where it is made, and who makes it, the Register includes 148,000 U.S. manufacturers, 50,000 classes of products, and 110,000 trade or brand names. It is updated biannually and is available on line from Dialog and on CD ROM. Thomas Online, 1 Penn Plaza, New York, NY 10119; 212/290-7291. **Reader service no. 680**

How to contact on-line services mentioned in this article.

BRS Information Technologies
8000 Westpark Dr.
McLean, VA 22102
800/289-4277

CompuServe Information Services
5000 Arlington Centre Blvd.
P.O. Box 20212
Columbus, OH 43220
800/848-8199

Dialog Information Services, Inc.
3460 Hillview Ave.
Palo Alto, CA
94304-1321
800/334-2564

Dow Jones News/Retrieval Services
Dow Jones & Co., Inc.
P.O. Box 300
Princeton, NJ
08543-0300
609/520-4000,
609/520-4660 (fax)

Mead Data Central Inc.
Nexis
P.O. Box 933
Dayton, OH 45401
800/277-9597,
800/277-8379
(Ohio),
513/865-6909 (fax)

NewsNet
Independent Publications
945 Haverford Rd.
Bryn Mawr, PA 19010
800/345-1301,
215/527-0338 (fax)

LAX SYNTAX

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Our team is standing by and ready to make your FastData computer perform to its greatest potential for you. When you buy a FastData computer, you're covered by Toll-Free technical support for life. And since we sell more software than other computer companies, we are uniquely qualified to give the proper support the customer deserves.

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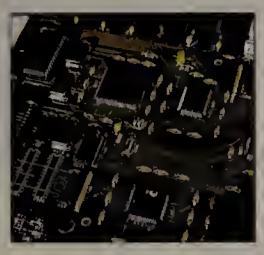


The whole is only as good as the sum of its parts; and FastData systems use some of the best parts in the industry. For example, each FastData system ships with a Keytronics keyboard; Keytronics costs a lot more than others, but the quality is worth it.

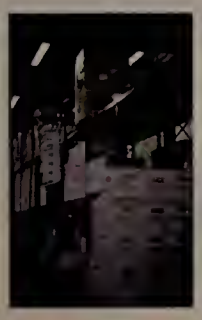
Our systems use exclusively Toshiba floppy drives, the industry leader. Standard equipment includes other quality components from Western Digital, Phoenix, Chips & Technologies, just to name a few.

Service.

All FastData personal computers come with a full one year warranty, but that's just the start. In the unlikely event your computer is down, it is our goal to get back up and working as quickly as possible - and we back it up with action. Call us toll-free and we'll work with you to determine the problem; if a part breaks, we will send you the replacement part through our FastSHIP program - before the broken part is returned to us - and we'll pay the freight both ways. If our phone support or FastSHIP program can't solve your problem, we will service it on-site to most U.S. locations or replace your computer at no charge. Now that's service.

Selection.

Our face to face retail background has made us never forget that the customer comes first and that a personal computer is just part of a customer's overall needs. That's why FastMicro offers thousands of hardware and software products to enhance your new personal computer. In fact, our competition will probably tell you to call us when you need something to run on their personal computer.



Risk Free.

We pass the test for the choosiest of customers; in fact, FastMicro sells to over half of the Fortune 500 and Universities in 47 states (we're working on the rest). These people buy for a living and rely on us, you can too. You can do more than take our word on it - go ahead and purchase any FastData brand product from FastMicro and if you are not thoroughly satisfied after 30 days, you can return it for a full refund of the purchase price.

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FastData 386 Systems

FastData 386/33 $2399

The fastest 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 100 megabyte 20 millisecond hard disk, 1024 by 768 VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a one-year warrantee with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- ✓ 33mhz Intel 386-DX processor.
- ✓ 64K high-speed memory cache.
- ✓ 4 megabytes RAM.
- ✓ 100 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Full size (shown) chassis with keylock, speed and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 230 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $99.
- ✓ FCC Class B approved.

System Price	65mb	80mb	100mb	200mb
Monochrome	$1,799	$1,929	$1,999	$2,499
VGA Color	$2,099	$2,229	$2,299	$2,599
VGA 1024	$2,199	$2,329	$2,399	$2,699

FastData 386/25 $1999

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand high speed 32 bit processing and expandability. The value of the 386/25 goes far beyond its price; it comes configured with a a full four megabytes of fast RAM, a quick 22 millisecond 65 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 512K VGA board. Also, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere.

Standard Features

- ✓ 25mhz Intel 80386-DX.
- ✓ 4 megabytes of zero wait-state RAM.
- ✓ 65 mb 22ms RLL hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. (For both add $69)
- ✓ Standard chassis (shown on left) with keylock, speed and reset buttons.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

System Price	65mb	80mb	100mb	200mb
Monochrome	$1,599	$1,729	$1,799	$2,099
VGA Color	$1,899	$2,029	$2,099	$2,399
VGA 1024	$1,999	$2,129	$2,199	$2,499

FastData 486/25

Call about our hot new 486, just $3,199 with the same standard features as our 386-33 system. Includes a 128K two-stage cache and is expandable to 64mb of memory.

All FastData Systems Include:

- 30 day money- back guarantee
- Toll-free technical support for life
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FastData SX Systems

$1599 FastData SX/20

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just $200 more than our SX/16, this machine also includes a second floppy drive in addition to the standard VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard and 40 megabyte hard drive. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- ✓ 20mhz Intel 80386-SX processor.
- ✓ 2 megabytes of zero wait-state RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" VGA color monitor with 16 bit VGA card with 256K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	$1,299	$1,369	$1,499	$1,569
VGA Color	$1,599	$1,669	$1,799	$1,869
VGA 1024	$1,699	$1,769	$1,899	$1,969

$1399 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit color VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel 80386-SX processor.
- ✓ 2 megabytes of zero wait-state RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. Both drives add $69.
- ✓ Standard chassis with keylock, speed and reset buttons (mini desktop shown - add $50).
- ✓ 200 watt power supply
- ✓ 14" VGA color monitor with 16 bit VGA card with 256K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	$1,099	$1,169	$1,299	$1,369
VGA Color	$1,399	$1,469	$1,599	$1,669
VGA 1024	$1,499	$1,569	$1,699	$1,769

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FASTMICRO 1-800-441-FAST

Hardware

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DJ-20 80-240mb Int. Tape 319
Conner *(see IDE controllers below)*
CP3044 40mb IDE 28ms 269
CP3104 100mb IDE 25ms 499
CP3208 200mb IDE 25ms 849

Seagate 89mb AT Kit

$399 IDE performance, big 89 megabyte capacity and Seagate quality make this kit a great buy. A 19ms access time and 5 mbps transfer rate assure great performance. Controller, cables and rails are included to make installation fast and easy.

Micropolis
MC1664 340mb ESDI 14ms 1295
MC1598 1.2gb SCSI 14ms 2895
NEC CDR-3501 Ext. CD-ROM w/interface 549
Plus Development
HardCard IIXL 50 - 52mb 9 ms 16bit 399
HardCard IIXL 105 - 105mb 9 ms 16bit 679
Impulse 42mb 12 ms 16bit IDE Kit 399
Impulse 105mb 9 ms 16bit IDE Kit 599

Toshiba 1.44mb Floppy Drive $69

Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add $5.

Seagate
30MB XT Kit ST238 w/ cont. 249
40MB AT ST251-1 MFM Drive 239
40MB AT ST157A 28ms IDE Drive 199
80MB AT ST296N SCSI Drive w/adaptor 349
89MB ST1102A 19ms IDE Drive 359
125MB ST1144A 19ms IDE Drive 469
210MB ST1239A 15ms IDE Drive 799
330MB ST2383E 16ms ESDI Drive 1289
Teac
1.2MB 5.25" Floppy 65
1.44MB 3.5" Floppy 65

Toshiba 100mb IDE Kit $489

Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and built-in 1:1 controller, 16 bit IDE card with dual floppy controller and cables, 5.25" brackets and rails. Call our experts for all your drive needs. Model MK234FC.

Toshiba
360K 5.25" Floppy (Black) 69
1.2MB 5.25" Floppy 69
1.44MB 3.5" Floppy 69
65mb MK134 22ms RLL drive 279
100mb MK234FC IDE 3.5" drive 449
Western Digital
WD 16 bit IDE Host - with dual floppy controller 39
WD93044 40mb IDE 28ms 199
WDAC280 80mb IDE 28ms 339
WE1007V-SE2 ESDI AT 1:1 dual controller 149

Sun Moon Star CD-ROM Drive

$549 Affordable CD-ROM technology is here! This player reads over 600mbs from just one CD and can even play your favorite audio CDs. Using a high quality Hitachi mechanism, it comes with a cable, interface and 18 month warrantee. Add an Illustrated Encyclopedia CD for $49.

BOARDS

Artisoft/Lantastic
Lantastic 2mbps Starter Kit - Two Station 369
Lantastic 2mbps Adaptor 169
Lantastic Ethernet Starter Kit - Two Station 499
Lantastic Ethernet Adaptor 239

ATI VGA Wonder + $189

New and improved, the ATI VGA *WONDER+* is faster than VRAM. It does interlaced and non-interlaced 1024x768 modes, is 100% register compatible, and comes with extensive software drivers. A free mouse is included as an added bonus. 512K version $219.

ATI
2400 ETC Internal ..... Call
2400 ETC External 187
9600/E External MNP V.42bis 479
VGA Basic 16 75
VGA Wonder + 256K 189
VGA Wonder + 512K 229
Brown Wagh Sound Blaster 149
Everex
2400B Int Modem 99
EGA 480 Card 69
RAM3000 16 bit RAM card 75
RAM8000 16 bit RAM card 169
Hayes
JT FAX 4800B Internal 139
Personal Modem 2400 w/Prodigy 119
Hercules Graphic Card + ... 169
Intel
Classic 2400 Modem Int./Ext. 137/167
Satisfaxtion Classic - Internal 9600 379
8087-2 115
287XL 199
387-DX25 479
387-SX16/20 ..... 319/349
Logitech
ScanMan Plus 165
Scanman 256 289
Orchid
ProDesigner II 512/1mb 279/329
Tiny Turbo 286 207
Tiny Turbo Xtra 267

Practical Modem 9600SA $449

This external modem features V.42 and MNP error correction combined with MNP/5 and V.42 bis data compression to provide total high speed throughput. The PM9600SA is also V.32 TCM, V.32, V.22 compliant and comes with a five year guarantee.

Paradise
Basic VGA - 8 bit 109
VGA 1024 256K/512K 175/199
Practical Peripherals
2400B Int Modem 125
2400B Int with MNP 169
PM9600SA Ext. V.32/V.42bis 449
Prometheus
Promodem 2400B Internal. 98
Promodem 2400G External 149
USRobotics
2400 Sportster Int/Ext. 119/147
2400 Sportster Int/Ext. 159/199
Courier HST 14,400 /Int.Ext. 539/579
Courier HST 14,400 Dual Standard Ext. 859
Video 7
VGA 1024i 256K 179
VGA 1024i 512K 209
V-RAM VGA 512K 299
ZOOM
HC2400 Internal 79
2400 V.42bis External Modem 169
9624 Send/Receive Internal Fax Modem 129

MONITORS

Mitsubishi
1410 EGA 325
Diamond Scan 1381 479
NEC
Multisync 2a 469
Multisync GS 2a 199
Multisync 3d 629
Multisync 4d ..... Call
Panasonic C1381 VGA 439
Princeton ..... Call
Seiko CM1440/1450 ..... 519/659
Sony 1304 Multiscan 669
Zenith 1492 ..... Call

FastData Products

FastData 16 Bit VGA

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.

$89 256K Vers.
$119 512K Vers.

FastData 16bit 1mb VGA 159
FastData CGA Card 35
FastData MGP Card 29

FastData 2400 Baud Internal Modem

$69 The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with BitCom software.

9600B SendFax w/ 2400B Modem 99
MFM 16 Bit 1:1 Hard/Floppy Disk Cont. 59
Parallel/Dual Serial/Game Card 29
RLL 16bit 1:1 Hard/Floppy Disk Cont. 69
XT 1.44 Dual Floppy Controller 35

FastData Monitors

Your best value, we have a complete line made for us by leading manufacturers like Samsung & Hyundai. Like all FastData products, you have a full 30 day money back guarantee. Shown is the VGA Color for $279.

FastData Monitors
12" Amber Monochrome 79
14" Amber Monochrome 109
14" White Monochrome 109
14" White VGA Monochrome 129
14" CGA Color .52 dot pitch 199
14" VGA Color .39 dot pitch 269
14" VGA Color .31 dot pitch 319
14" Super VGA 1024 x 768i .28 dp. 349

PRINTERS

Canon BJ10E 319
BJ300/BJ330 ..... 495/Call

Citizen GSX140

Loaded with features, this 24 pin printer is a hot seller! It comes with 6 resident fonts, paper parking, and Epson & IBM printing modes. It does up to 192 CPS and has a unique LCD control panel that lets you set everything without DIP switches. Upgrade to color anytime for just $39.

$285

Citizen
200GX 189
GSX140 / GSX145 ..... 285/395
Fujitsu DL3400 359
NEC
P3200 269
P3300 369
P6200 469
P6300 629
OKIDATA Okilaser 400 669

NEC Silentwriter 2 Model 90 $1595

PC Magazine's editor's choice! The new NEC model 90 comes with 2mb of memory, Postscript by Adobe with 35 fonts, and parallel, serial and Appletalk interfaces. All this and 6 ppm speed, an easy-to-use LCD operator panel and letter, legal, & envelope feed.

Panasonic
KXP1180 155
KXP1123 ..... Call
KXP1624 429
KXP4420 Laser 829
KXP4450/4455 Lasers ..... Call
Seiko Smart Label Printer 167
Star
NX1001 149
NX1500 299
NX2410 249
XB2410 / 2415 ..... 429 / 569
Texas Instruments Microlaser PS17 1199
Microlaser PS35 1499

FastData 286/12 $799

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Keytronics keyboard. And since its a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add $69)
- ✓ Standard chassis
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ *287XL* coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, and two serial ports.
- ✓ Keytronics enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ Full documentation.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	$799	$869	$999	$1,069
VGA Color	$1,099	$1,169	$1,299	$1,369
VGA 1024	$1,199	$1,269	$1,399	$1,469

FASTMICRO

Software

1-800-441-FAST

DATABASE & FORMS

askSam 5.0	209
Avery List & Mail Plus	37
Clarion Personal Developer	45
Clarion Professional Developer	449
Clipper 5.0	489
DataEase	459

Personal R:Base $69

Who's says powerful relational databases are expensive. Not with the new easy-to-use Personal R:Base. It has intuitive pull-down menus that let you query your data, build quick forms and reports automatically and even build applications without complex programming.

dBase III+	439
dBase IV	479
dBXL Diamond	129
Formbase	299
FormTool Gold	52
Formfiller	85
Foxbase Plus	177
FoxPro	417
Paradox 3.5	489
Per:Form Designer & Filler	155
Personal Rbase	69
Q & A	214
RapidFile	99
Rbase for DOS	447
Reflex	159

DESKTOP PUBLISHING

Adobe Postscript Cart. for HPLJ-II	279
db Publisher Professional	389
GEM Desktop Pub.	159
Pagemaker	479

Corel Draw Version 2.0 $359

Winner of all the top awards, Corel Draw gives you more for your money. It supports the new Windows & includes incredible drawing and editing tools. Includes over 100 typefaces and 300 pieces of clipart. CorelTrace converts scanned art to smooth vector images in seconds. This is the most complete illustration package we've ever seen!

PFS:First Publisher	89
Printshop	33
Publisher's Paintbrush	149
Publish It!	135
Ventura Publisher Gold / Windows	519

FINANCIAL

Bedford Integrated Acct.	145
DAC Accounting 4.1	79
DAC Bonus Pack 4.1	119
DAC Payroll 4.1	57
Dollars & Sense	Call
Macintax 1040 for Windows	57

Peachtree Complete III $139

A super value! Includes General Ledger, Accts. Payable, Accts. Receivable/ Invoicing, Purchase Order, Payroll, Inventory, Job Cost, Fixed Assets and more. Loaded with over 450 reports, automatic backup and helpful manuals.

Managing Your Money	125
Money Matters	49
One Write Plus G/L, A/P & A/R	159
Peachtree Complete III	139
Peachtree with Data Query	209
Quicken	36
Taxview 1040 Prof. for Windows	299
Turbo Tax Personal 1040	39
Turbo Tax Professional	209
Wealth Builder	129

GRAPHICS

Autosketch 3.0	139
Corel Draw 2.0	359
Design CADD 3-D	185
DrawPerfect	265
Freelance Plus	307
Generic 3D Drafting	199
Generic Cadd Level 2 Starter Kit	95
Generic Cadd 5.0	219
Harvard Graphics	289
PC Paintbrush IV Plus	109
Perspective Jr.	69
PFS:First Graphics	89

Harvard Graphics $289

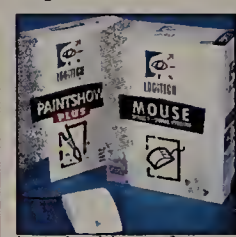
The leading business graphics package, Harvard Graphics lets you create superior charts and graphs with ease. Plus, it comes with advanced drawing tools and symbol libraries, imports Lotus spreadsheets, and has advanced 3D features.

INTEGRATED

First Choice	89
Framework XE	95
Geoworks Ensemble	115
LotusWorks	89
SmartWare II	417
Symphony 2.2	489
Works	89

MICE/INPUT

Keytronics KB101 Keyboard	59
Keytronics Professional Mouse	59
Logitech HiRes C9 Serial	65
Logitech HiRes C9 Bus	76
Logitech Trackman Serial	75



Logitech C9 Serial Mouse $65

Our best-selling mouse is top rated also. Comes with software to adjust the resolution just the way you want it and includes driver software and Pop-Up-Dos to make your computer hum at your fingertips. For PaintShow, add $15.

Logitech Serial w/Windows	127
Microsoft Serial or Bus Mouse only	83
Microsoft Serial or Bus w/ paint	95
Microsoft with Windows 3.0	147
Z-Nix Serial Mouse w/Windows 3.0	99

PROGRAMMING

Macro Assembler	89
Microsoft C Compiler	303
Turbo C++	129
Turbo C++ Professional	189
Turbo Pascal	90
Quick Basic	60
Quick C	60
Quick Pascal	60

SPREADSHEETS

Allways	106
Excel	309
Lotus 1-2-3 version 2.2	325
Lotus 1-2-3 version 3.1	399

Lotus 1-2-3 Version 2.2 $325

The standard for spreadsheets, Lotus 1-2-3 version 2.2 is faster and more powerful than previous versions that made it famous. Includes add-in manager and more functions for greater flexibility. Also comes with Allways for great presentations made easy.

Lucid 3-D	53
Quattro Pro (call for details)	89
Supercalc 5D	289

WORD PROCESSORS

Facelift for WordPerfect	57
Grammatik IV	49
LetterPerfect	119
Multimate 4.0	267
Professional Write	149
Rightwriter	58
Sprint	117

WordPerfect 5.1 $239

What can we say? WordPerfect is the #1 rated word processor and the top selling software in the U.S.A. Its got almost every feature imaginable and yet it is easy to use. The current version adds pull-down menus, mouse support, table creation and equation editor. Add this to the best software support in the business and you can't go wrong!

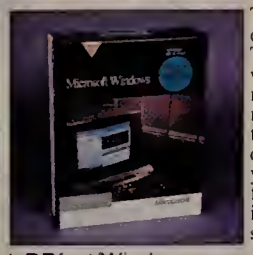
Word	209
Word for Windows	309
Word Perfect 5.1	239
Word Perfect Add'l Station	153
Word Perfect Office	79
WordStar Professional	Call

Call On Non-Listed Items

WINDOWS SOFTWARE

Adobe Illustrator	279
Adobe Type Manager	59
Ami	115
Ami Professional	287
Asymetrix Toolbook	279
Bitstream Facelift	57
Corel Draw 2.0	359

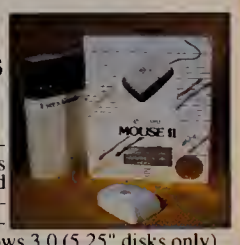
Windows 3.0 $89



The graphical user interface everyone is talking about! Turns your 286 or above with 640K or more of memory into a powerful multitasking workstation that runs even non-Windows applications. Plus, if you buy Windows now from FastMicro, we'll throw in 10 of the best Windows shareware programs.

DBfast/Windows	189
Excel	309
Form Publisher	139
Grammatik IV for Windows	49
HDC First Apps	46
HDC Windows Express	46
Micrographix Draw +	149
Micrographix Designer	449
MicroPhone II	199
Microsoft Mouse w/ Windows 3.0	147
Microsoft Productivity Pack	39
Microsoft Windows Developer's Kit	309
Pagemaker	479
Per:Form Pro	259
Powerpoint for Windows	309
Project for Windows	429
Publisher's Powerpak for Windows	45
Windows 3.0	89
Windows Entertainment Pack	27
WingZ Spreadsheet	309
Word for Windows	299

Serial Mouse with Windows $99



This high-resolution serial mouse by Z-Nix is ergonomically designed and has adjustable resolution. This bundle includes Microsoft Windows 3.0 (5.25" disks only) and mouse software.

ENTERTAINMENT & EDUCATION

Bannermania	21
Carmen SanDiego Deluxe Edition	45
F-19 Stealth Fighter	38
Hunt for Red October	19
King's Quest 5 (VGA Vers.)	38
Leisure Suit Larry II or III	35
Microsoft Flight Simulator	38
Aircraft & Scenery Designer	27
Microsoft Learning DOS	32
NFL Challenge	55
PC Globe or PC USA	35
Simcity	28
Tetris	19

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Utility Software

[illegible]	69
[illegible] Sr	65
[illegible]	37
[illegible]	59
[illegible]	69
[illegible]	60
[illegible]	05

DESQview 386 $115

[illegible] multitasking to your [illegible] includes DESQview, the [illegible] award winning [illegible] environment. Also includes QEMM386, the memory manager for 386 machines that makes DESQview scream and [illegible] transform your [illegible] (LIM 4.0) memory, [illegible] memory [illegible] as an added bonus!

[illegible]	68
[illegible]	115
[illegible]	57
[illegible]	37
[illegible]	129
[illegible]	59/179

Central Point Backup $59

[illegible] also supports [illegible]

Fastback Plus	109
Headroom	59
Labels Unlimited	37
Laplink III	85
Mace Utilities 1990	85
Mace Vaccine	59
Norton AntiVirus	79
Norton Backup	90
Norton Commander	90
Norton Utilities 5.0	109
PC Anywhere IV	95
PC Tools Deluxe 6.0	85
Personal Lawyer	34
P.D. Queue	55
PFS:Preface	43
Pop Drop Plus	53

PC Tools Deluxe $85

Get the collection of utilities that's won every award we've ever heard of! Includes Dos shell, desktop manager, disk cache, and data communications. Also includes hard drive utilities such as DiskFix, undelete, unformat, backup and recovery. It also has Fax support, a special version of LapLink, and even more!

PrintRite	55
ProComm Plus	65
Prodigy	25
QA Plus	85
QEMM 386	54
QRAM	43
SideKick Plus	119
Sideways	55
Smartcom Exec	69
Software Carousel	49
Super PC Kwik	43
XTree Gold 2.0	89

CD ROM DRIVES

FRED STIMSON

CD ROM DRIVES ARE FASTER, SLIMMER, AND CHEAPER THAN EVER BEFORE, AND MOST CAN NOW ACCESS A FULL 680MB DISK. CHECK THIS GUIDE TO FIND THE RIGHT DRIVE FOR YOUR BIG MULTIMEDIA AND DATA BASE JOBS.

ROBERT LUHN

In the world of storage, you can never be too thin or too fast. Today's crop of CD ROM (compact disk read-only memory) drives won't blind you with their speed, but they're twice as swift as their predecessors and small enough to fit in a floppy drive bay—and they break the $500 street price barrier with amazing regularity.

That's good news if you hanker to get at the commercial data bases distributed on CD ROM disks. No longer a novelty, CD ROMs include everything from sophisticated financial data bases to massive font collections. Multimedia disks, which incorporate video and synchronized sound, are on their way, too, but they may require the next generation of faster CD ROM players (see the sidebar "Is Multimedia in Your Future?").

Another big plus in today's CD ROM drives is standardization. Since the drives are made by a handful of manufacturers that abide by the same specifications, most units are pretty similar. And since all CD ROM drives support the High Sierra and ISO 9660 standards, which lay out basic rules for storing data, you should be able to play most contemporary disks in almost any CD ROM drive.

Nonetheless, manufacturers are competing by offering lower prices, greater speed, or more sophisticated features—some new drives can read the maximum possible amount of data on a CD ROM (about 680MB) or run on their side; others feature linear transport motors that position the read head much more quickly.

BEFORE YOU BUY

Since most CD ROM drives are fairly similar, the bottom line here is speed and price. However, don't forget the basics: Make sure the drive comes complete with a mounting kit (if the unit is internal), cables, adapter, a "caddy" for holding disks in the drive, and Microsoft's MS-DOS CD-ROM Extensions version 2.2. And don't take mean time between failure (MTBF) ratings too seriously. MTBF typically applies to motor life, but most drives die from bad power supplies, faulty lens assemblies, and other ailments. A long warranty is your best protection. Finally, consider the following factors.

Performance The three most reliable measures of a drive's performance are average access time, throughput, and the size of the drive's buffer. The fastest drives hit 340ms to 360ms, include 32K or 64K buffers, and boast throughput of 150K per second. This is still three times slower than a floppy drive, so the faster the CD ROM drive, the better.

Capacity A CD ROM can theoretically hold 680MB of data. Most commercial applications don't go beyond 600MB, but upcoming disks packed with graphics, video, and digital sound may need every byte. Plan for tomorrow—buy a drive that can access as much data as possible.

Expandability Adding multiple CD ROM drives to your system is relatively easy. Depending on the manufacturer, you can plug multiple drives directly into one or more adapters or, more commonly, daisy-chain drives off the first installed unit.

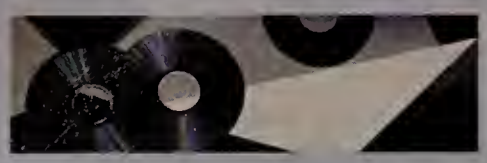
Another solution is Pioneer's DRM-600 CD ROM Changer—it has a cartridge that holds up to six disks and treats each like a different logical drive. If LAN access is a must, consider the multidrive units, software, and high-speed controllers offered by Online Computer Systems and Meridian Data that let several users access multiple drives simultaneously.

Compatibility Today's CD ROM drives are so standardized that you should be able to connect them to just about any PC, XT, AT, 386, or 486 system. Many vendors also supply interface kits for the PS/2. If Mac access is important, consider purchasing a

(continues)

CD ROM DRIVES

DOS = DOS 2.xx–4.xx
DOS3-4 = DOS 3.xx–4.xx
DOS2 = DOS 2.xx
DOS3 = DOS 3.xx
DOS4 = DOS 4.xx
LAN = Lantastic
LANMAN = LAN Manager
MAC = Macintosh OS 6.xx
NEXT = NeXTstep
NET2 = NetWare 2.15c
NET3 = NetWare/386
OS/2 = OS/2 1.xx



STANDARD FEATURES

Vendor	Product	Price[1]	Average access time (ms)	Built-in buffer (K)	Max. throughput (K/sec)	Max. accessible storage (MB)	Supports CD ROM Extensions 2.2	Linear motor head positioning	Internal/external unit	CD audio	Eject button	Emergency eject option	Separate output jacks
CD TECHNOLOGY	CD Porta-Drive	$1015	350	64	175.3	683	N	Y	E[2]	Y	Y	N	Y
CHINON AMERICA	CDS-431	$650	350	32	150	680	Y	Y	I	Y	Y	Y	Y
	CDX-431	$795	350	32	150	680	Y	Y	E	Y	Y	Y	Y
	CDC-431	$895	350	32	150	680	Y	Y	E[3]	Y	Y	Y	Y
COREL SYSTEMS	Corel Kurata/CD	$794	380	64	153	680	Y	Y	E	Y	Y	Y	Y
DENON AMERICA	DRD-251	$799	400	32	153	680	Y	N	I	Y	Y	N	N
	DRD-253	$1099	400	32	153	680	Y	N	E	Y	Y	N	Y
GENESIS INTEGRATED SYSTEMS	GenStar 2000	$499	500	32	160	550	N	Y	E	Y	Y	N	Y
HEWLETT-PACKARD	HP CD-ROM Drive	$1095	500	n/a	176	680	N	N	I	N	N	N	N
IBM	PS/2 CD-ROM Drive	$1250	380	n/a	150	600	N	Y	I	Y	Y	N	N
	PS/2 External CD-ROM Drive	$1550	380	n/a	150	600	N	Y	E	Y	Y	N	N
LASER MAGNETIC STORAGE INT'L	CM202	$590	350	n/a	176	680	Y	N	I	Y	N	N	Y
	CM214	$755	350	64	176	680	Y	N	I	Y	N	Y	Y
	CM221	$715	350	n/a	176	680	Y	N	E	Y	N	Y	Y
	CM231	$995	350	64	176	680	Y	N	E	Y	N	Y	Y
	CM50	$699	800	n/a	176	680	Y	N	E	Y	Y	Y	N
MICRO DESIGN INT'L	LaserBank 600Ci	$895	400	64	176.4	635	Y	Y	I	Y	Y	N	N
	LaserBank 600CE	$995	400	64	176.4	635	Y	Y	E	Y	Y	N	N
MULTIMEDIA SYSTEMS	CDR-3600PC	$895	450	32	153	680	Y	Y	I	Y	Y	Y	Y
	CDR-1700S-PC	$995	340	32	153	680	Y	Y	E	Y	Y	Y	Y
	CDR-3650	$865[5]	450	64	153	680	Y	Y	I	Y	Y	Y	Y
	CDR-1750S	$965[5]	340	64	153	680	Y	Y	E	Y	Y	Y	Y
NEC TECHNOLOGIES	Intersect CDR-36 Portable	$599	<600	64	150	680	Y	Y	E[2]	Y	Y	N	Y
	Intersect CDR-73	$949	<300	64	150	680	Y	Y	E	Y	Y	N	Y
	Intersect CDR-83	$849	<300	64	150	680	Y	Y	I	Y	Y	N	Y
PIONEER COMMUNICATIONS OF AMERICA	CD-ROM Mini-changer	$1295[5]	600	n/a	153	688	Y	Y	E	Y	Y	N	Y
PLI	PL CD-ROM Drive	$1099	380	64	150	680	Y	Y	E	Y	Y	Y	Y
PROCOM	MCD-ROM 650/E	$895	350	n/a	153.6	650	Y	N	E	Y	Y	Y	N
REFERENCE TECHNOLOGY	Series 500:												
	CDU-541	$835	380	64	150	680	Y	Y	I	Y	Y	Y	N
	CDU-6211	$1055	380	64	150	680	Y	Y	E	Y	Y	Y	N
	CDU-531	$695	380	8	150	680	Y	Y	I	Y	Y	Y	Y
	CDU-6201	$795	380	8	150	680	Y	Y	E	Y	Y	Y	Y
SUN MOON STAR	CD-Set	$995	450	32	153.6	550	Y	N	E	Y	Y	Y	N
TODD ENTERPRISES	TCDR 6000	$965	<400	32	153	600	N	Y	E	Y	Y	Y	N
	TCDR 6050	$995	<400	64	153	600	N	Y	E	Y	Y	Y	N
TOSHIBA AMERICA INFORMATION SYSTEMS	XM-3201B1	$800	350	64	153.6	683	Y	Y	I	Y	Y	Y	N
	XM-3201A1	$950	350	64	153.6	683	Y	Y	E	Y	Y	Y	N

[1]Price includes drive and adapter/controller. [2]Portable drive [3]Via dealer. [4]Via MS-DOS CD extensions

FRED STIMSON

SCO = SCO Xenix
SUN = Sun OS
TOPS = TOPS

CD-I = Compact Disc-Interactive
DVI = Digital Video Interactive
HFS = Macintosh HFS

HS = High Sierra/ISO 9660
XA = Extended Audio

	ADAPTER/CONTROLLER							COMPATIBILITY		WARRANTY		
Drive runs on side	Serial	SCSI	Proprietary	Max. number of daisy-chained drives	Max. drives run from single system	MCA version	Operating systems	CD ROM standards	Number of months	Extended warranty	Money-back guarantee	Reader service no.
Y	N	Y	N	8	32	Y	DOS, MAC, LAN, OS/2	DVI, HFS, HS, XA	12	N	Y	690
Y	N	Y	N	7	7	Y	DOS, MAC	HFS, HS	12	N	N	691
Y	N	Y	N	7	7	Y	DOS, MAC	HFS, HS	12	N	N	691
Y	N	Y	N	7	7	Y	DOS, MAC	HFS, HS	12	N	N	691
Y	N	Y	N	7	56	Y	DOS3-4, NET3	HFS, HS, XA	12	N	Y	692
Y	N	Y	N	7	32	Y	DOS3-4, LAN, MAC, OS/2	HFS, HS	12	Y	Y[3]	693
N	N	Y	N	7	32	Y	DOS3-4, LAN, MAC, OS/2	HFS, HS	12	Y	Y[3]	693
Y	N	N	Y	8	64	N	DOS, LAN, NET2, NET3	CD-I, DVI, HS, XA	12	Y	Y[3]	694
Y	Y	N	N	4	7	N	DOS	HS	12	N	Y	695
Y	N	Y	N	7	7	Y	DOS3-4[4], OS/2	HS	12	N	N	696
Y	N	Y	N	7	7	Y	DOS3-4[4], OS/2	HS	12	N	N	696
Y	Y	N	N	1	4	N	DOS3-4	CD-I, HS, XA	24	N	N	697
Y	N	Y	N	7	7	Y	DOS3-4, MAC, OS/2, SCO, SUN	CD-I, DVI, HFS, HS, XA	24	N	N	697
Y	Y	N	N	1	4	N	DOS3-4	CD-I, HS, XA	24	N	N	697
Y	N	Y	N	7	7	Y	DOS3-4, MAC, OS/2, SCO, SUN	CD-I, DVI, HFS, HS, XA	24	N	N	697
N	Y	N	N	1	4	N	DOS3-4	CD-I, HS, XA	12	N	N	697
Y	N	Y	N	7	7	Y	DOS3-4, LAN, NET2, NET3, OS/2, SCO	HFS, HS, XA	12	Y	Y	698
Y	N	Y	N	7	7	Y	DOS3-4, LAN, NET2, NET3, OS/2, SCO	HFS, HS, XA	12	Y	Y	698
Y	N	N	Y	8	4	N	DOS, LAN , NET2, NET3	HS	12	Y	N	699
N	N	N	Y	8	4	Y	DOS, LAN , NET2, NET3	HS	12	Y	N	699
Y	N	Y	N	7	7	Y	DOS, LAN, MAC, NET2, NET3, OS/2, SCO, SUN	DVI, HFS, HS,	12	Y	N	699
N	N	Y	N	7	7	Y	DOS, LAN, MAC, NET2, NET3, OS/2, SCO, SUN	DVI, HFS, HS,	12	Y	N	699
Y	N	Y	N	8	1	N	DOS, MAC, NET2, NET3, SCO	CD-I, DVI, HFS, HS	24	Y[3]	N	700
Y	N	Y	N	8	8	N	DOS, MAC, NET2, NET3, SCO	CD-I, DVI, HFS, HS	24	Y[3]	N	700
N	N	Y	N	8	8	N	DOS, NET2, NET3, SCO	CD-I, DVI, HFS, HS	24	Y[3]	N	700
N	N	Y	N	7	7	Y	DOS3-4, MAC, SCO, SUN, TOPS	CD-I, DVI, HFS, HS	12	N	N	701
Y	N	Y	N	7	21	Y	DOS3-4, MAC, NEXT, TOPS	CD-I, DVI, HFS HS, XA	12	Y	Y	702
Y	N	Y	N	7	42	Y	DOS3-4, MAC	HFS, HS	12	N	N	703
Y	N	Y	N	7	7	Y	DOS3-4, NET2	HS	3	Y	N	704
Y	N	Y	N	7	7	Y	DOS3-4, NET2	HS	3	Y	N	704
Y	Y	N	N	4	4	Y	DOS3-4, NET2	HS, XA	3	Y	N	704
Y	Y	N	N	4	4	Y	DOS3-4, NET2	HS, XA	3	Y	N	704
Y	N	N	Y	4	4	Y	DOS, OS/2, SCO, TOPS	CD-I, HS	18	Y	N	705
Y	N	N	Y	8	48	Y	DOS, MAC	HS	12	N	N	706
Y	N	Y	N	8	48	Y	DOS, MAC	HS	12	N	N	706
Y	N	Y	N	8	32	Y	DOS, LAN, MAC, SCO, SUN	DVI, HFS, HS, XA	12	Y	N	707
Y	N	Y	N	8	32	Y	DOS, LAN, MAC, SCO, SUN	DVI, HFS, HS, XA	12	Y	N	707

[5]Price includes drive only.

For more information about all products in this table, circle reader service no. 906.

IS MULTIMEDIA IN YOUR FUTURE?

If you plan to use any of the thousands of text-oriented data bases available on CD ROM, the drives listed in our table will do nicely. But if you're concerned about multimedia, the picture is decidedly fuzzy.

Most experts agree that "compatibility" with video standards such as DVI (full-motion video) and XA (synchronized sound) boils down to speed—raw, continuous throughput. Most surveyed vendors believe their existing drives *will* be fast enough, but not all multimedia developers are convinced.

Intel has only approved three drives for its DVI standard: the Toshiba XM3201A1 and XM3201B1, and the Sony CDU-541. (Intel's not saying which drives failed.) Savvy buyers should call Intel and get an updated list before buying a drive for multimedia.

Additionally, Intel, Microsoft, and other multimedia players say that a CD ROM drive for multimedia applications should support version 2.2 of Microsoft's CD-ROM Extensions and come with large buffers and device drivers optimized by the drive supplier for multimedia applications. Also look for units that use faster linear transport head positioning and that can access as much data as possible (up to 680MB).

But if multimedia capability is your key reason for buying a drive, your best strategy may be to wait. Industry insiders and drive vendors admit off the record that much faster drives are expected in late 1991. —*R. L.*

SCSI drive—you may be able to plug the drive directly into a Mac's SCSI port. However, CD ROM applications designed for the PC usually can't be read by a Mac. Note, too, that operating system support other than for DOS varies wildly, so check carefully.

A CD ROM IS A CD ROM IS A...

Although *multimedia* is the buzzword of the year, standards are in flux, and heavy-duty applications probably won't appear for a year or two. In the meantime, the drives listed here will let you tap into the many data bases, photo and font galleries, illustrated hypertext encyclopedias, and other applications that will dominate the CD ROM market for the next few years.

Robert Luhn is a contributing editor for PC World.

WHERE TO BUY

CD Technology
780 Montague Expy.
#407
San Jose, CA 95131
408/432-8698,
408/432-0250 (fax)

Chinon America
660 Maple Ave.
Torrance, CA 90503
800/441-0222,
213/533-1727 (fax)

Corel Systems Corp.
Optical Products Division
1600 Carling Ave.
Ottawa, Ontario
Canada K1Z 8R7
613/728-8200,
613/761-9177

Denon America
222 New Rd.
Parsippany, NJ 07054
201/575-7810,
201/808-1608 (fax)

Genesis Integrated Systems
1000 Shelard Pkwy.
#270
Minneapolis, MN
55426
800/325-6582,
612/544-4347 (fax)

Hewlett-Packard
Customer Information Center
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900

IBM
Old Orchard Rd.
Armonk, NY 10605
800/426-2468

Intel PCED
5200 N.E. Elam Young Pkwy.
Hillsboro, OR 97124
800/538-3373

Laser Magnetic Storage Int'l
4425 Arrowswest Dr.
Colorado Springs, CO
80907
719/593-7900,
719/593-4597 (fax)

Meridian Data
5615 Scotts Valley Dr.
Scotts Valley, CA
95066
408/438-3100,
408/438-6816 (fax)

Micro Design Int'l
6985 University Blvd.
Winter Park, FL 32792
407/677-8333,
407/677-8365 (fax)

Multimedia Systems
Division of Hitachi Home Electronics
401 W. Artesia Blvd.
Compton, CA 90220
800/369-0422 ext. 537, 213/515-6223 (fax)

NEC Technologies
1414 Massachusetts Ave.
Boxborough, MA
01719
800/632-4636

Online Computer Systems
20251 Century Blvd.
Germantown, MD
20874
800/922-9204

Peripheral Land Incorporated (PLI)
47421 Bayside Pkwy.
Fremont, CA 94538
800/288-8754,
415/683-9713 (fax)

Pioneer Communications of America Inc.
600 E. Crescent Ave.
Upper Saddle River, NJ
07458-1827
800/527-3766,
201/327-9379 (fax)

Procom Technology, Inc.
200 McCormick Ave.
Costa Mesa, CA
92626
714/549-9449,
714/549-0527 (fax)

Reference Technology, Inc.
5775 Flatiron Pkwy.
#220
Boulder, CO 80301
800/345-9569,
303/449-4157,
303/442-1816 (fax)

Sun Moon Star
1941 Ringwood Ave.
San Jose, CA 95131
800/545-4786,
408/452-7811,
408/452-1411 (fax)

Todd Enterprises
224-49 67th Ave.
Bayside, NY 11364
800/445-8633,
718/343-1040,
718/343-9180 (fax)

Toshiba America Information Systems
Disk Products Division
9740 Irvine Blvd.
Irvine, CA 92718
800/456-3475,
714/583-3133 (fax)

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- 20MB hard drive (25ms access time).
- Weighs under 6 pounds.

LCF-PCD

Specifications are subject to change without notice.

Circle 214 on reader service card

It took us thousands of step
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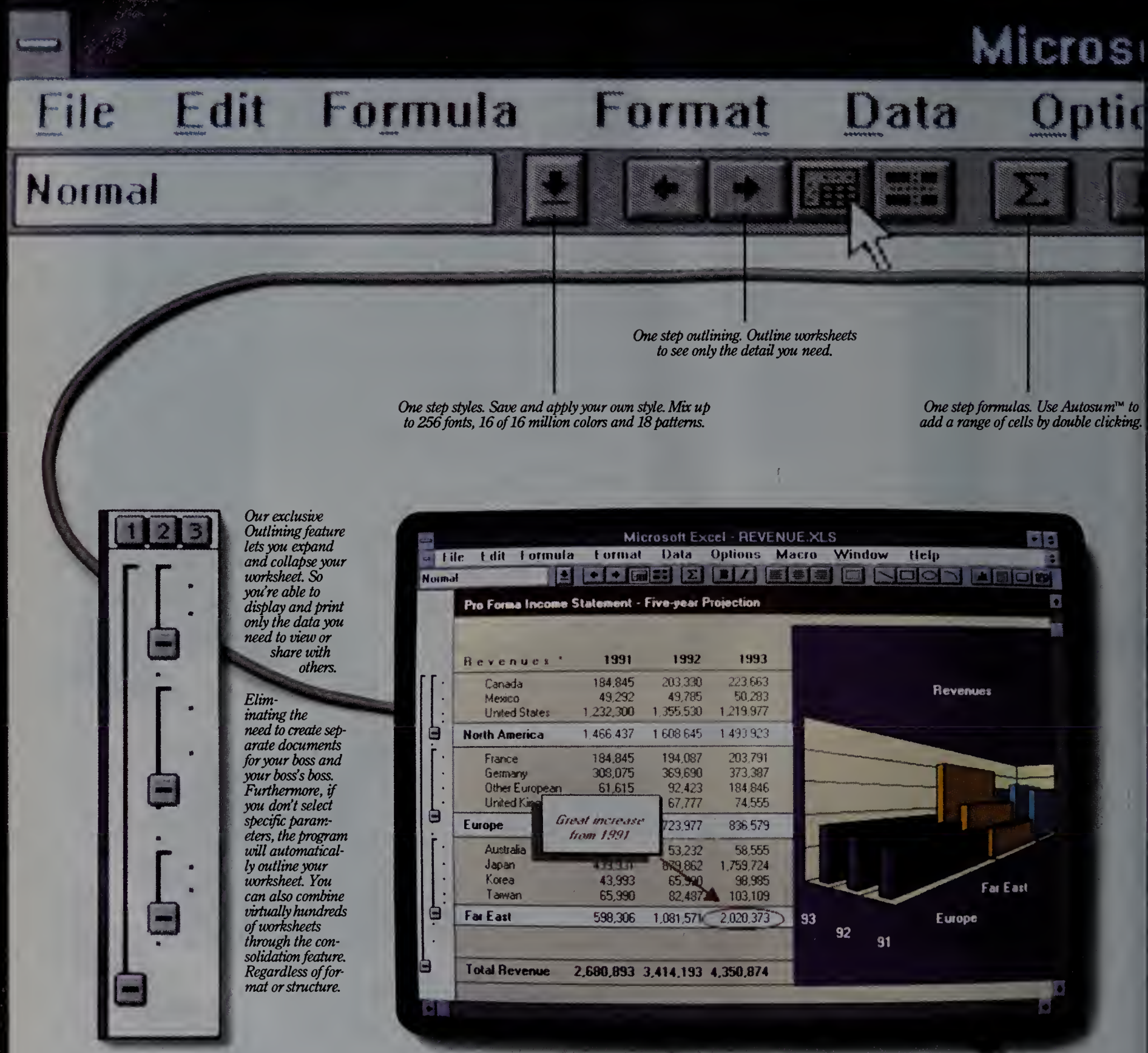

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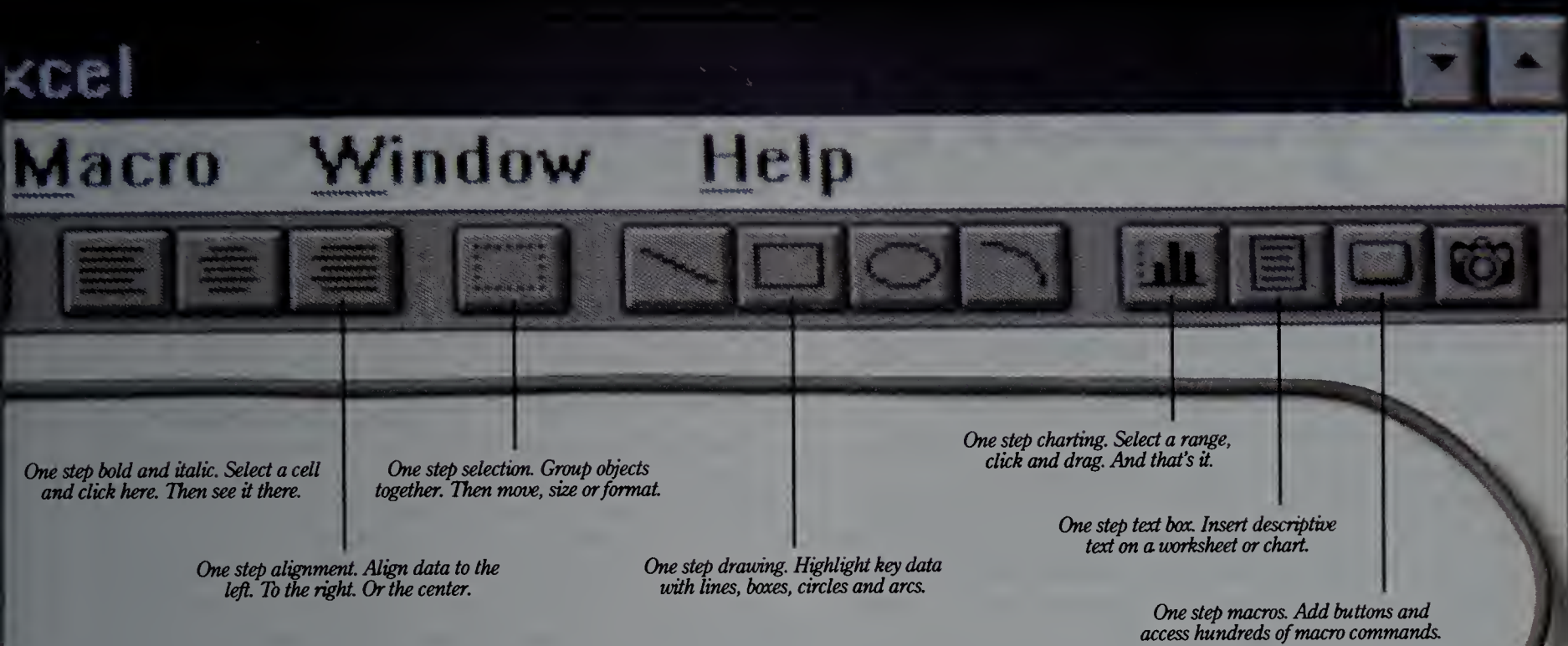
o make this spreadsheet do
ely it'll only take you one.



One step bold and italic. Select a cell and click here. Then see it there.

One step selection. Group objects together. Then move, size or format.

One step charting. Select a range, click and drag. And that's it.

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One step drawing. Highlight key data with lines, boxes, circles and arcs.

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Introducing Microsoft Excel version 3.0.

Out of all the steps it took us to create the new Microsoft® Excel for Windows™, there were two in particular that had the most impact. The first was to listen to our users and to listen carefully. The second was to take that knowledge and implement it intelligently.

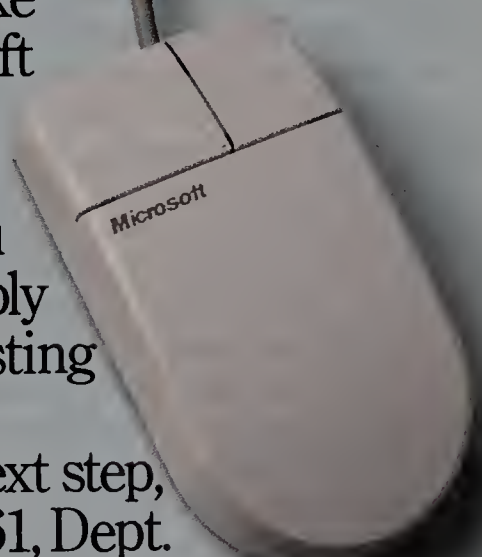
The result is outrageous power coupled with ease-of-use. It is this idea that drives all of our efforts. And has since we introduced the first graphical spreadsheet back in 1985.

A recent example of this is the Toolbar™. This addition lets you do everything from formatting, to formulas, to outlining with one click of a button.

Best of all, it's really easy to make the move. Microsoft Excel comes with online help for 1-2-3® users. So you can learn by simply applying your existing knowledge.

Take the next step, call (800) 541-1261, Dept. P64, for the name of a dealer near you.

"Click"



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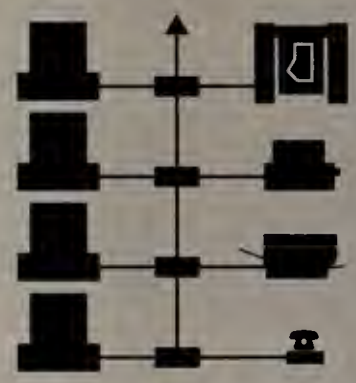
A full-blown server-based network costs a bundle when done right. Add to this the cost of training and ongoing support (sometimes 2 to 3 times the original investment). Undaunted, businesses bite the bullet every day—effectively turning over their entire computer operations to a LAN expert forever. But many, in seeking a less costly alternative, fall into the trap of false economy.

We say "neither is necessary." Why? How?



Systemizers®

Connectivity and networking solutions abound. And with them come traps of all kinds. Unless you're a teflon-coated decision maker (or a job hopper), the solution you choose today should remain appropriate tomorrow. Let's look at where you can go wrong—and right.

First, consider printer sharing boxes. There are seemingly hundreds of them. They're a fine short-term solution when you have two or three computers occasionally needing access to a single printer. But, when applied to more extensive or demanding applications, they become a bottleneck, impede and frustrate users, and are ultimately a dead-end easily-outgrown solution... simply put: the "F word" (*False* economy).

Wouldn't you call this a bottleneck: a printer sharing box—driven by a *single* microprocessor—receiving print data from *several* computers, while it is simultaneously supposed to send this data to *several* printers? Wouldn't you be an unhappy user if, along with enduring the bottleneck factor, you lose your data when somebody resets or turns off the box? And what happens when the box breaks and *nobody* can print until it's fixed? To add insult to injury, printer sharing boxes are often quickly outgrown because they have a finite assortment of inputs and outputs. Hence the conclusion: false economy.

If not printer sharing boxes, then consider networks (LANs). They're a hot item nowadays. LAN dealers invite you for a free analysis of your networking "needs". Sure, they'll help you—while they help themselves to your bank account. Good networks are EXPENSIVE, and require expert support forever! You will always be accountable to the LAN, like a state and federal sales tax on every change or addition you make related to your computers.

Not that there aren't inexpensive networks available. Some are downright cheap. But, should you build your business around them? Cheapo networks teach harsh lessons in false economy and, sometimes, false advertising—resulting in NO economy!

You see, some low-cost LANs boast that they occupy very little memory (RAM), yet to realistically accomplish what the LAN is supposed to do, it really uses as much or more RAM as any other LAN. The truth is: all LANs will occupy a substantial amount of RAM, and you will quite likely find yourself either having to add RAM to your PCs (if you can), along with memory management software, or dumping some of your other software overboard.

The lesson in false economy comes later, when you buy a multi-user software package and discover it is only (guaranteed) compatible with a server-based data-sharing LAN, usually Novell's®. Oops! Old LAN overboard!

Want to avoid such harsh lessons? Rule number one: if and when your company has some computer users who need a data-sharing network—so they can simultaneously access a shared database—get the best network money can buy. Buy UPSs, tape backups, the works. Make the commitment. It's a big step, but you'll regret anything less.

It's highly unlikely, however, that ALL your computer users need—or will ever need—access to a shared database. Most probably just need to share printers and other peripherals like plotters, modems and fax machines. Perhaps everyone would also like to exchange E-Mail and maybe even pass data files between PCs electronically.

Systemizers® are a connectivity solution that will provide these capabilities with none of the traps, drawbacks or excessive costs and commitments previously mentioned. You can apply Systemizers on a global scale, then selectively employ a high-end server-based LAN solution for those users who absolutely need it. All users in the company—whether they're on a LAN, WAN, PBX, mainframe, or are independent—can be Systemized™, and they'll all benefit from it greatly. In fact, if users are Systemized, the investment required for any future data-sharing LAN will be significantly less. Plus, because Systemizers will be handling all print "traffic", the data-sharing LAN will perform better and more reliably.

You owe it to yourself and your company to look further into Systemizing™. Find out why almost 100,000 users are now Systemized, most at some of the world's largest companies. With plenty of LANs, WANs, PBXs and mainframes at their disposal, why have so many huge companies made Systemizing their basic connectivity standard? Call or fax us, and we'll show and tell you.

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Circle 19 on reader service card

Quick Results With Word for Windows

Word for Windows' fancy fonts and graphical ease of use can be yours in a flash—especially if you already use Word for DOS. Just follow this quick-start guide.

George Campbell

INSIDE HOW TO

195 **Word Processing**
Words Into Print
Basic steps for importing spreadsheet data into your word processor.

201 **Spreadsheets**
Spreadsheets (A..Z)
Make *1-2-3* spreadsheet printing trouble-free.

203 **Data Management**
Data Basics
Strategies for setting up efficient mailing lists.

207 **Publishing & Graphics**
The Art of Persuasion
How to add pictures to your documents for maximum impact.

213 **Communications**
The Information Edge
Tap into Usenet, the freewheeling global information network.

217 **User Group Tips**
- *AutoCAD* problem solver
- MORE made more efficient
- Speed *Ventura* loading

Word Processing

Switching from *Word* to *Word for Windows* is a bit like falling in love for the second time. The basic moves are the same, but the details are completely different.

Word for Windows, affectionately called *WinWord,* retains Microsoft's "select, then format" approach but is built around a completely new set of commands. This guide to *WinWord* begins by walking you through the editing commands you probably used most in *Word*—selecting text, cutting and pasting, using the glossary, and so on.

Next, you'll meet the Ruler and the Ribbon, *WinWord*'s push-button solutions to formatting. Finally, you'll spend some time with advanced functions like styles, macros, and document conversion and learn where to find more help.

Taking Command of WinWord

WinWord's new menus are far more logical than *Word 5*'s old system. To take full advantage of them, though, you need a mouse. Here's how *WinWord*'s menus are organized: *Word*'s Transfer and Print menu commands are now in its File menu. The Format and Window menus remain about the same. Library selections, like hyphenation, spell checking, and the thesaurus, have moved to the Utilities menu.

You'll use the Insert menu to insert bookmarks, footnotes, page numbering, annotations, graphics, spreadsheet data, mail merge fields, and index and table of contents entries. The View menu controls the document's on-screen appearance, while the Macro menu han-

A Basic Anatomy of Word for Windows

Word for Windows *makes basic editing operations quick and easy. Here are the main commands for selecting text, cutting and pasting, inserting boilerplate, and managing windows.*

Cutting (or Copying) and Pasting

First select the text, then click on *Edit,* choose *Cut* or *Copy,* click on the desired location, then select *Paste.* All scrap is now deleted to and pasted from the *Windows* Clipboard. You can also use **<Shift>-<Delete>** and **<Shift>-<Insert>** to cut and paste from the Clipboard; don't use the <Delete> key alone unless you want to delete the text forever. The Undo command will reverse your last action.

Headers and Footers

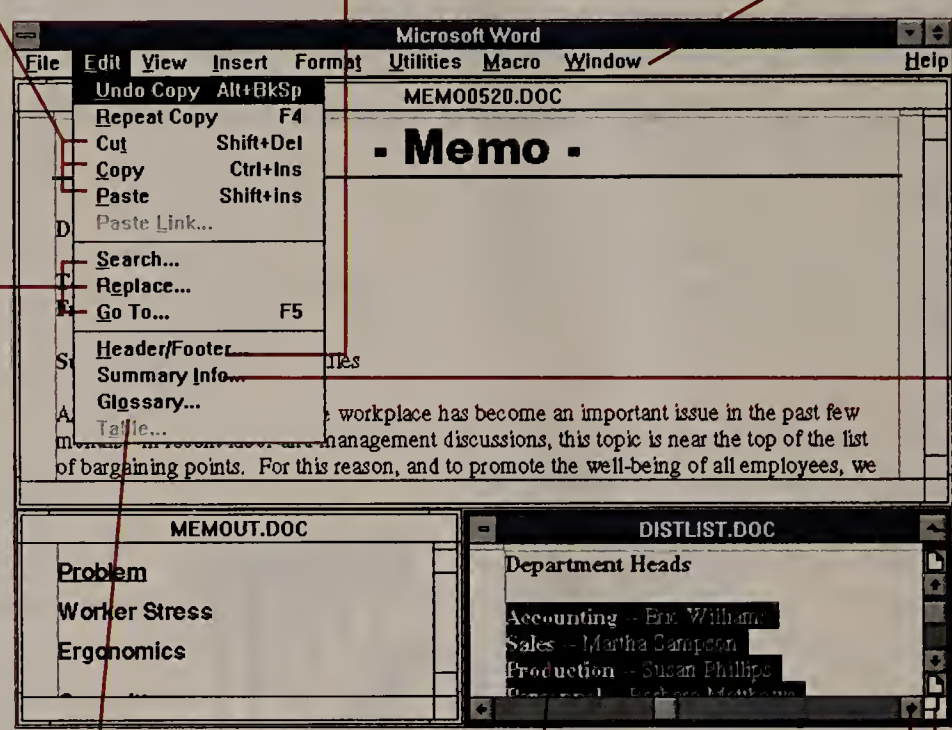
Creating headers and footers is slightly different in *WinWord.* Instead of typing in the text, then selecting and formatting it, you first choose the *Header/Footer* command. Then select *Header* or *Footer,* click on the *Options* button, if desired, to set positioning and page numbers, and click *OK.* A shaded box will appear at the top or bottom of your file. Type your header or footer text in the box; then click anywhere in your file to resume other work.

Using Multiple Windows

To create different windows on the same file, use *Window New window.* If you need multiple windows containing different files, use *File New* or *File Open. Window Arrange all* will automatically size and position the windows.

Search, Replace, and Go To

WinWord's Search and Replace commands pop up dialog boxes; just enter the same search information you would use in *Word.* The Go To command acts like *Word's* Jump command, allowing you to jump to a specified page or to a bookmark. To create a bookmark, select *Insert Bookmark,* type in a name, and click *OK.* Now you can type the name of the bookmark anywhere in your file and use **<F5>** to get there anytime.



Document Summaries

This *WinWord* command lets you create, view, or alter the summary at any time, unlike in *Word.* Click on the *Statistics* button in the Summary dialog box for even more information, including a full word count and data on how long you've been working in the file.

Zooming Windows

Click here to instantly expand the current window to full size.

Glossary Text

Give this command to create or insert standard boilerplate text. *WinWord's* glossary for boilerplate is similar to *Word's;* but you can't use it to create or run macros. For those procedures, use the Macro menu instead.

Selecting Text

To select a block using a mouse, simply click and drag, just as in *Word.* If you prefer to use the keyboard, hold down **<Shift>**, then use the cursor keys.

Sizing Windows

Size a window by clicking on a side or corner of its border or on the corner icon and then dragging the window to the desired size. Move a window by clicking in its title bar and dragging the frame.

---

dles *WinWord's* powerful macros. Finally, *WinWord's* Help menu has the answers to many questions; or you can press **<F1>** for context-sensitive help.

WinWord's Ribbon and Ruler: Shortcuts to Productivity

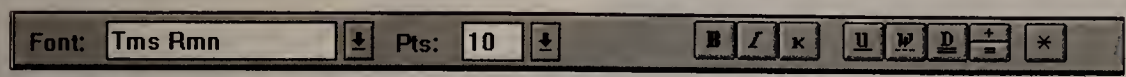
WinWord's real claim to fame is its new Ribbon and Ruler. These features allow you to perform common formatting chores merely by clicking on a "button." If neither feature appears on screen, click on the *View* menu, then click on the appropriate entry.

The Ribbon, which appears near the top of your screen, controls basic text formatting; you'll need the Format menu only for complex changes. Here's how to use the Ribbon:

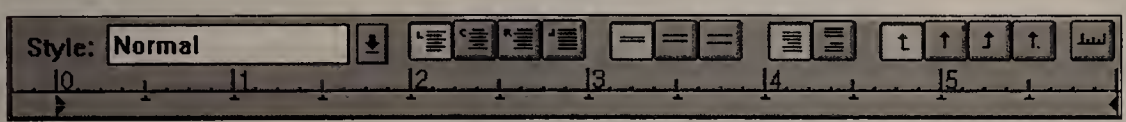
First, select the text you want to format. Then, to choose a font, click on the arrow to the right of the box displaying the current font's name, and select a new font from the list box. You can alter the size of the text by clicking on the arrow next to the 'Pts:' (points) box and selecting a size. If you need a font size not shown in the list box, click inside the size window and type a new value.

The buttons on the right half of the Ribbon control character appearance. Click on the button marked *B* for boldfacing. The remaining buttons control italics, small caps, underlining (with options for continuous, word-by-word, and double underlining), superscript (+), and subscript (=) formats. The button marked with an asterisk toggles the display of text boundaries and special characters, like spaces and tabs, that are not checked in the View Preferences dialog box.

Clicking a button applies its style to selected text. Click on it again, and you remove the formatting. If you double-click on any blank area on the Ribbon, the full character-formatting dialog box pops up.



You can use these handy buttons on the Ribbon instead of consulting a menu to perform common formatting chores.



The buttons on the Ruler control paragraph formatting and access to styles.

The Ruler, which appears at the top of each document, controls paragraph formatting and styles. To attach a style to selected text, click on the Style arrow, then click on your choice.

With the first four buttons to the right of the Style arrow, you can align selected text flush left, center it, move it flush right, or make it fully justified on the page. Set line spacing with the three buttons in the center of the Ruler, which allow for single-, one-and-a-half–line, and double-spacing. The next two buttons control single- and double-spacing between paragraphs.

The four buttons marked with arrows are tab selectors, representing flush-left, center, flush-right, and decimal tabs. To set a tab, simply click one of the tab selector buttons to highlight it, and then click on the Ruler at the desired tab position. Setting a tab clears the default tabs to the left of the tab you set (the default tabs are represented by inverted *T*s just below the Ruler). To clear a tab that you've set, simply click on it and drag it off the Ruler.

Below the Ruler you'll find two triangular icons, the left one split in two. You control the right margin of the paragraph containing the cursor (or of highlighted paragraphs) by dragging the right triangle. The lower half of the left triangle does the same for the left margin of the paragraph(s). The upper half of the left triangle sets first-line indent or outdent.

To control the document's margin and multiple-column-width settings, first click the tiny ruler icon that's on the right side of the Ribbon to toggle the Ruler's mode. The tab indicators disappear, and *WinWord* displays square-bracket icons that indicate document margins, which you can drag to reposition. For more complex chores, you can pop up the paragraph-formatting dialog box by double-clicking on any blank area of the Ruler.

Working With Styles

If you're like most people, you probably never used style sheets in *Word*. In *WinWord*, many of the style sheet functions have been simplified and collected in pulldown style menus specific to each document.

When you click the Style arrow on the Ruler, you can choose Normal, which is 10-point Times Roman, or one of three heading styles. All text appears in Normal by default.

To apply another style, say Heading 1, put your cursor in the line or paragraph you want to change, click on the Style arrow, and select *Heading 1*. The entire paragraph will change style.

To apply the style to the entire document, select the document by holding down <**Ctrl**> and pressing **5** on the numeric keypad; then apply the style.

You can easily create your own styles. Just choose whatever enhancements you want to make—underlining, indentation, a new font, and so on. Then place your cursor anywhere on the paragraph, click on the Style arrow, type a new style name right in the list box, press <**Enter**>, and click on *Yes* to confirm the new style.

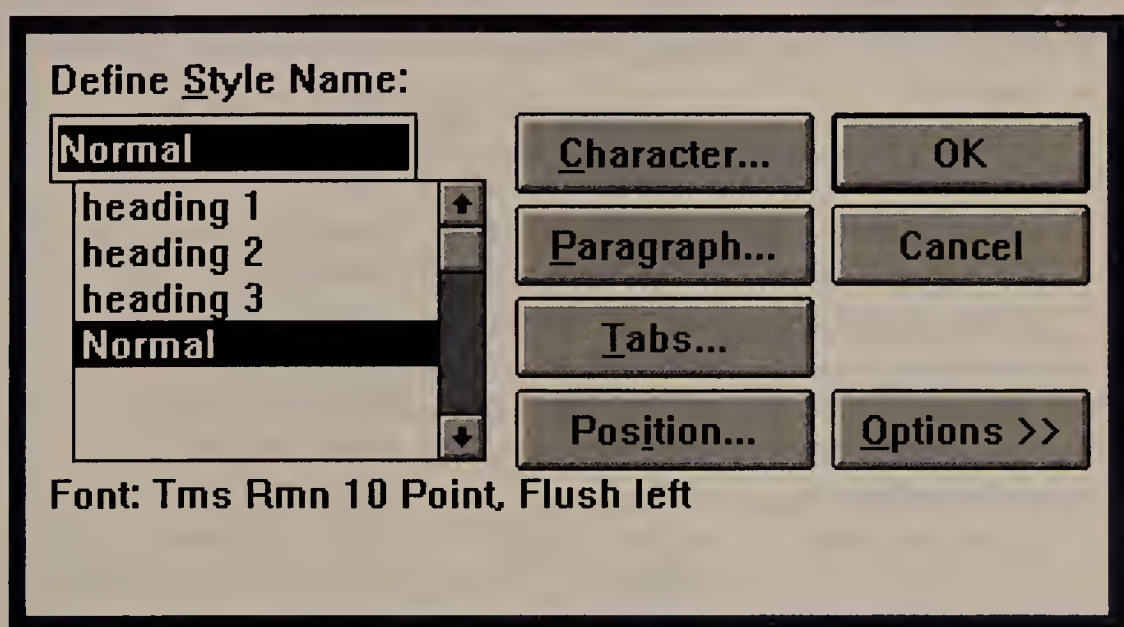
All in all, you'll find *WinWord* styles more sophisticated yet simpler to use than *Word*'s.

WinWord's Way With Macros

There's one painful consequence of making the switch to *WinWord*. Your *Word* macros become history, and you must start over from scratch.

It's easy to record macros in *WinWord* though, and the improved Word Basic macro language lets you create more complex macros. Even better, you can attach *WinWord* macros to keystrokes or even place favorite macros on any *WinWord* menu.

To record a macro, click on *Macro*



To change WinWord's default font, you load NORMAL.DOT from the \WINWORD directory, select Format Define styles, click the Character button, and choose your desired font and point size.

Record, type in a name and a description, press <Enter>, and issue the keystrokes and mouse clicks you want to record. When you're done, click on *Macro Stop recorder*.

You can run a macro by selecting *Macro Run* and double-clicking on the macro's name in the list box. But a macro is easier to run if you assign it to a keystroke or add it to a menu.

To do this, select the *Macro Assign to key* or *Macro Assign to menu* command. Choose the appropriate macro, specify a keystroke or select the menu where you want the macro to appear, click *Assign*, select *OK*, and you're in business.

SHORTCUTTING WORD FOR WINDOWS

Many *Word for Windows* keystroke shortcuts are similar to those in *Word*. To perform most character and paragraph formatting shortcuts, for example, substitute <Ctrl> for <Alt>. <Ctrl>-B instead of <Alt>-B will make your text bold. Here's a quick guide to 25 useful shortcuts.

Action	Word	Word for Windows
Load file	<Ctrl>-<F7>	<Ctrl>-<F12>
Save file	<Ctrl>-<F10>	<Shift>-<F12>
Print document	<Ctrl>-<F8>	<Ctrl>-<Shift>-<F12>
Context-sensitive help	<Alt>-H	<F1>
Toggle overtype/insert	<F5>	<Insert>
Cut to scrap	<Delete>	<Shift>-<Delete>
Paste from scrap	<Insert>	<Shift>-<Insert>
Undo last action	<Esc>-U	<Alt>-<Backspace>
Select previous word	<F7>	<Ctrl>-<Shift>-<Cursor Left>
Select next word	<F8>	<Ctrl>-<Shift>-<Cursor Right>
Select previous paragraph	<F9>	<Ctrl>-<Shift>-<Cursor Up>
Select next paragraph	<F10>	<Ctrl>-<Shift>-<Cursor Down>
Extend selection	<F6>	<F8>
Select whole document	<Shift>-<F10>	<Ctrl>-<Numpad 5>
Boldface text	<Alt>-B	<Ctrl>-B
Italicize text	<Alt>-I	<Ctrl>-I
Underline text	<Alt>-U	<Ctrl>-U
Format hidden text	<Alt>-E	<Ctrl>-H
Remove formatting	<Alt>-<Space>	<Ctrl>-<Space>
Center text	<Alt>-C	<Ctrl>-C
Left-justify text	<Alt>-L	<Ctrl>-L
Right-justify text	<Alt>-R	<Ctrl>-R
Fully justify text	<Alt>-J	<Ctrl>-J
Insert page break	<Ctrl>-<Shift>-<Enter>	<Ctrl>-<Enter>
Use thesaurus	<Ctrl>-<F6>	<Shift>-<F7>

From WinWord to Word—and Back Again

While you're learning *Word for Windows*, you'll probably feel more at ease if you know how to convert documents to and from *Word*. Converting old *Word* documents is simple: Just load the document with *File Open*, click on *Word for DOS* in the conversion dialog box, and the process will occur automatically.

Most document features convert perfectly; however, margins set in more than one division in the old document will not convert. Also, if you used fonts in *Word for DOS* that are named differently in *Word for Windows*, you'll have to rename the fonts.

To save the file permanently as a *WinWord* file, use the *File Save as* command and accept the Normal style. To convert a *Word for Windows* document to *Word* format, select *File Save as*, type in a different document name, select *Options*, click on the File Format arrow, and then scroll down to *MS Word* and select it.

Where to Get More Help Learning Word for Windows

While this brief guide should get you started on making the switch, plenty of other help is available.

Start with Microsoft's excellent tutorial lessons, accessed with the Help Tutorial command. The Other Word Processors entry in the Help Index is another rich source for *Word* users. Finally, the user manual Getting Right to Word has a chapter designed to help *Word for DOS* users. With these tools at your disposal, switching to *Word for Windows* should be relatively easy.

George Campbell is a contributing editor for PC World.

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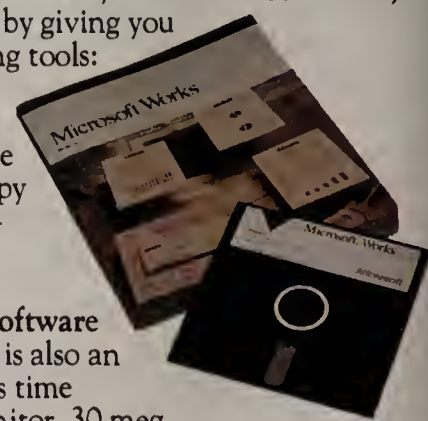

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Words Into Print

Word Processing

Tips for getting the most out of your word processor

This month: Import spreadsheet data into your documents, print blocks of text in WordPerfect, and center documents vertically with a Word 5.0 macro.

George Campbell

Whether you're creating a sales letter, a memo, or an annual report, a table of spreadsheet data can back up your argument and add impact. Fortunately, word processors like *WordPerfect* and *Word* make spreadsheet imports easy. You can even update the data whenever the original worksheet changes.

You'll typically include spreadsheet data in a table format. For letters and memos, try a simple text table set off with white space. In formal documents, like annual reports, surround data with a box or add captions and shading.

Table updates can be helpful when you're assembling a document over a period of time or when the document is revised on a regular basis. When you update the data, the entire worksheet or range is reimported. That usually results in the loss of at least some formatting, so it's usually best to format the table just before printing.

The memo in **SCREEN 1** shows an example of a *WordPerfect* table that incorporates sales data from *Excel*. To create this memo, you would type the text, and then use your word processor's spreadsheet linking commands to import the entire spreadsheet or just a range of cells. After a little minor formatting to realign the tabular material, you're done.

Every word processor handles spreadsheet imports differently. Here are some tips for *WordPerfect 5.1* and *Word 5.0*.

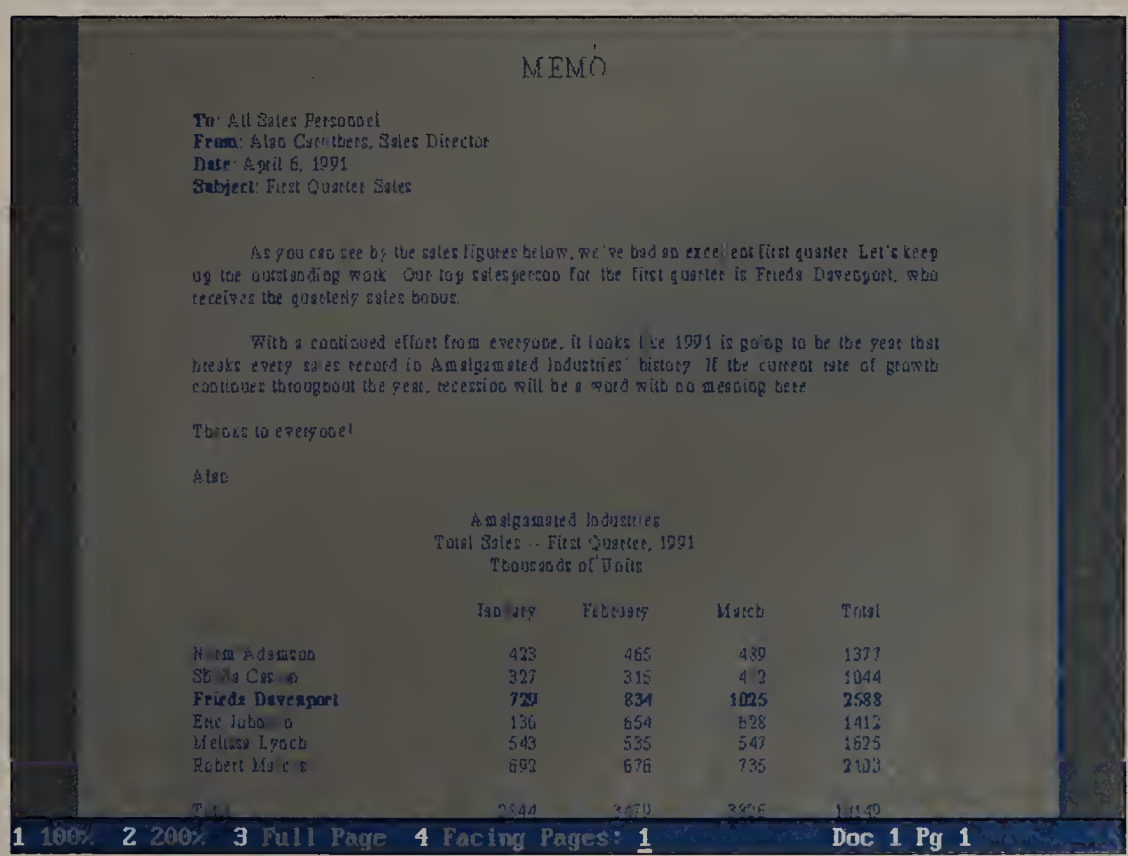
Linking Up With WordPerfect

WordPerfect 5.1 documents can include data from *1-2-3*, *Excel 2*.x, and *PlanPerfect* versions 3.0 through 5.0. *1-2-3* release 3 users must save spreadsheets in WK1 format.

To create an updatable link, position the cursor within a document, then press **<Ctrl>-<F5>sc** or, if you won't need to update, **<Ctrl>-<F5>si**. Next, press **f**, type the path and file name for the spreadsheet, and press **<Enter>**.

If you need only a range of spreadsheet cells, press **r**, and enter the range in any of three formats: A1:H15, A1.H15, or A1..H15. If the spreadsheet contains named blocks or ranges, just type the range name, or press **<F5>** to pick from a list. Then press **<Enter>**.

To import the data in text format, press **t**, then **e**. If you have *WordPerfect 5.1*, you can type **a** instead of **e** to import the data into the table editor instead. Still, it's usually easier to use the text option for simple links where you don't need lines, boxes, or shading. If you import the spreadsheet into a table, every cell, including each empty cell, becomes



SCREEN 1: Once you import spreadsheet data into a document, you can format it like normal text. Most word processors either update the data from the original worksheet automatically every time you load the file, or let you do it manually.

a cell in the table, which can sometimes make editing difficult. The table editor is a big help, however, for advanced table formatting. For example, you can draw boxes, shade selected cells, and wrap text within cells, handy for long text labels.

To perform the link, press **p**. You'll see the data, with comment boxes above and below. If you import the data as text, tabs separate the cells, with hard returns at the end of each line. Since empty cells are imported too, you may need to delete excess tabs. To view the tab markers, press **<Alt>-<F3>**, which opens the Reveal Codes window.

If you choose *WordPerfect*'s table option, move the cursor inside the table, then press **<Alt>-<F7>**. You can use normal table editing tools to control lines and cell dimensions and to delete unwanted rows and columns. For example, to delete a column, move the cursor to a cell within the column, press **<Delete>**, and then press **c**. To control lines and shading, press **<Alt>-<F7>**, block a group of cells, then press **l** to use the Lines menu.

You can use *WordPerfect* formatting tools to add fonts or alter imported data in either text or table format, but if you update the link, the formatting is lost. To update the data, move to the top of the document by pressing **<Home><Home><Cursor Up>**, and then press **<Ctrl>-<F5>sl**. To update the table's contents manually, press **u**, and to update automatically each time you retrieve the document, press **r**. If you update automatically, just remember to check the figures so your text references to the table stay up-to-date. In the same menu, press **s** to view or hide the link's comment boxes.

WORDPERFECT SHORTCUT

Print a Block

A little-used *WordPerfect* command lets you print a block of text. Just follow these steps:

1. Use the **<Alt>-<F4>** block command or your mouse to mark the text you want to print.
2. Press **<Shift>-<F7>y** to send the block to the printer.

—*G. C.*

WORD SHORTCUT

Vertical Centering

Many short documents, like letters, look better if they're centered vertically on the page. This *Word 5.0* macro does that job with one keystroke. On a blank *Word* screen, follow these steps:

1. Press **<Shift>-<F3>** to begin recording.
2. Press **<Shift>-<F10><Esc>fo<Cursor Down>**.
3. Type **centered**, then press **<Enter><Cursor Up>**.
4. Press **<Shift>-<F3>** and type **VCenter.Mac**, but don't press <Enter>. (If you want to assign this macro to a hot key, such as **<Ctrl>-C**, type a caret (^) and then press **<Ctrl>-C**.)
5. Now press **<Enter>**. Press **<Esc>tgs<Enter>** to save the macro.

To use the macro, create a document, then press **<Ctrl>-C**, or if you didn't assign it to a hot key, press **<Esc>i<F1>**, then select *VCenter.Mac* from the menu. The normal editing screen won't show the difference, but if you press **<Ctrl>-<F9>**, you'll see the text centered between the top and bottom of the page. —*G. C.*

Word's Way With Links

Creating spreadsheet links in *Microsoft Word 5.0* is similar. *Word* can handle *1-2-3* WKS and WK1 files, plus files from *Excel* and *Multiplan*.

To establish a link, position the cursor, then press **<Esc>lls**. At the prompt, type the data file's path and name. To import the entire spreadsheet, press **<Enter>**. To import a range of cells, press **<Tab>**, then specify the range desired—for example, **A1..H15** in *1-2-3*, **A1..H15** in *Excel*, or **R1C1:R15C15** in *Multiplan*. You can also press **<F1>** to select from a list of the worksheet's current range names. Press **<Enter>** to complete the link. *Word* marks links with hidden text codes. To view them, press **<Esc>o<Cursor Right>y<Enter>**.

Word imports spreadsheet data into a single paragraph, with new line characters between lines. Tabs separate the cells. Empty cells in the original spreadsheet also appear as tabs. To view the tab markers, press **<Esc>o<Cursor Right><Cursor Down>a<Enter>**. To display the tab-setting ruler, place the cursor anywhere in the paragraph, then press **<Alt>-<F1>**. As with *WordPerfect*, you can format the data using ordinary formatting commands.

Word offers no automatic updating, but manual updates are easy—with the document loaded, just press **<Shift>-<F10><Esc>lls<Enter>y**. As with *WordPerfect*, all linked data is reimported, forcing you to reformat the text.

George Campbell is a contributing editor for PC World.

HIGHLY RECOMMENDED

When Accounting Today (May 1990) asked accountants which accounting software package they recommended to their small business clients, an overwhelming 29% said they recommend Peachtree Accounting– that's almost double the next largest competitor.

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"Installation is easy, data entry is fast...a joy to use."–PC Resource, July 1990

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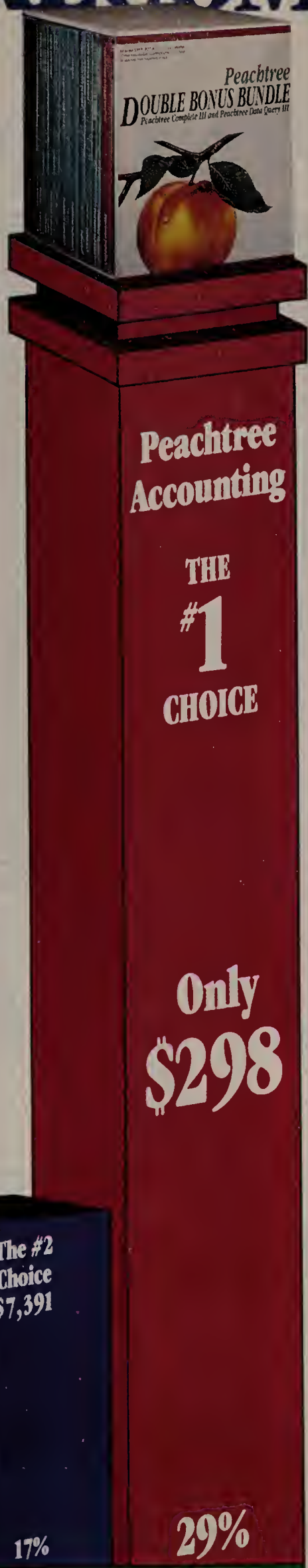

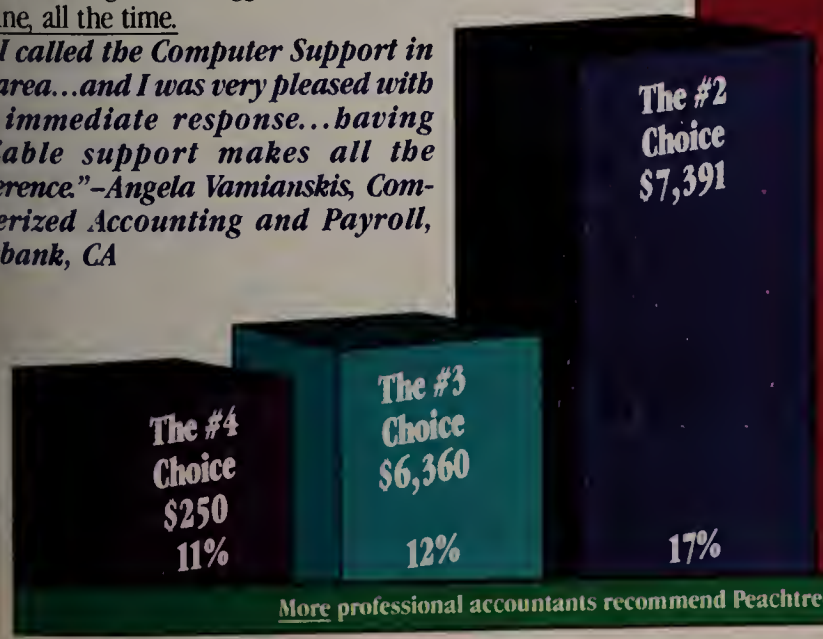

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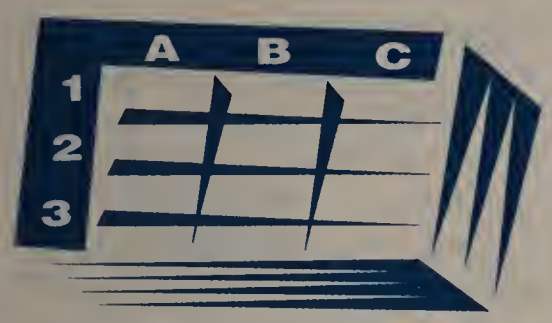
Spreadsheets (A..Z)



Spreadsheets

Practical tips for building better worksheets

This month: a printing primer

Richard Scoville

With spreadsheets, the big "Aha!" often comes right after you plug in the latest numbers. But committing your cellular masterpiece to print for others is equally important—and often frustrating. In this month's column, we'll discuss some techniques for trouble-free printing.

Printing *1-2-3* release 2.*x* worksheets is simple—as long as all your rows and columns fit on one page. Select */Print Printer* to access the print menu, choose *Range*, move the cell pointer to one corner of the range, press <**Period**>, paint the range, and press <**Enter**>. Then select *Align* to indicate the beginning of a new report, *Go* to begin printing, and finally, *Page* to eject the page. Don't neglect the *Align* command: It tells *1-2-3* that you're beginning a new report, and leaving it out will result in misaligned page breaks in your second printout.

Small Is Beautiful

This procedure works well as long as your print range fits within the screen width. With standard top and bottom margins and page length, *1-2-3* prints up to 56 rows on one sheet; additional rows go on an additional page.

The *1-2-3* screen is 72 characters wide—exactly the same as a page with standard margin settings at 4 and 76. This setup is just right for 8½-inch pages at 10 characters per inch. If you center something on the screen, it will be centered on the page.

Getting Bigger? Squeeze It!

But what if the range you want to print is wider than 72 characters? You have several alternatives: The simplest is to use a wide-carriage printer. On 14-inch-wide paper, each line can hold up to 140 characters. Use */Print Printer Options Margins Right* to set the right margin to about 132. With the left margin at 4, you'll be able to print a range up to 128 characters wide.

If you can't make the page bigger, make the print smaller. Let's say your printer's compressed mode yields 17 characters per inch with a maximum line length of 137 characters. Use */Print Printer Options Margins* to set the left and right margins to, say, 10 and 134.

If your printer is equipped with font selection buttons, use them to select the compressed font; if not, use */Print*

SPREADSHEET TOOLBOX

What WAS in Your Last Worksheet?

WAS: The Worksheet Archive System fills an important niche for companies that rely on large *1-2-3* worksheets for mission-critical record keeping. It lets you maintain an audit trail of changes in a worksheet, without wasting disk space by saving successive generations of the worksheet.

A *WAS* archive stores a map of the current worksheet; after editing and resaving the worksheet, you append the new version to the archive. *WAS* records just the changes, along with the date of the changes and notes, such as who made them. At any point, you can quickly compare the current worksheet with the previous version, or even reconstruct any of the successive versions in a new WK1 file.

WAS is a stand-alone program with a simple, *1-2-3*–like interface. It's most valuable for large, static worksheets; if your worksheets change their structure frequently, the significant changes will soon become lost in a swarm of irrelevant ones. But if accuracy and accountability are critical, using *WAS* could become an important step in your organization's procedures.
—*Richard Scoville*

WAS: The Worksheet Archive System $79.95; TRM Computers, 2106 Arborview Blvd., Ann Arbor, MI 48103; 313/994-6289
Reader service no. 606

Printer Options Setup and enter the appropriate printer command string. For most dot matrix printers, try **\015**; for LaserJet printers, use **\027E\027(s16.66H**. For information on command strings used for landscape printing, see *PC World's Instant Reference Card* for *1-2-3*, August 1990.

EXCEL SHORTCUT

Create Cell Names Quickly in Excel

Ralph Soucie

Excel's Formula Create names command is a handy way to assign meaningful names to a range of cells en masse. It's especially useful when you have a rectangular range with text labels at the left and at the top.

Let's say you've got a worksheet that breaks down sales figures by month and state for the Midwest region in the range A1:K10, with text labels for the states in column A and for the months in row 1. Simply select the entire range A1:K10, select *Formula Create names*, select the *Top row* and *Left column* options in the dialog box, and click *OK*. That's all it takes.

This makes building formulas much easier. If row 9 is labeled *Minnesota* and column J is labeled *October*, formulas can refer to cell J9 as simply *Minnesota October*.

Using 1-2-3's Borders Command

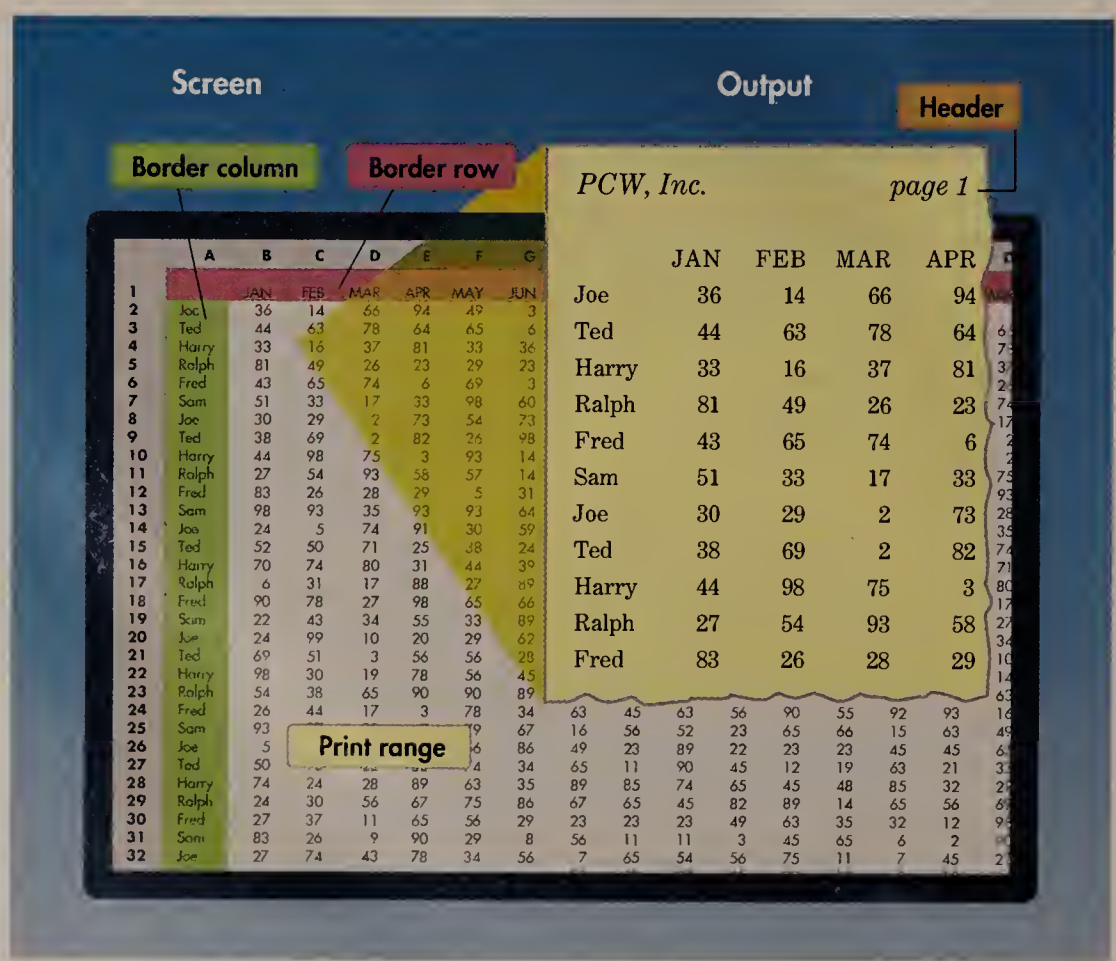


FIGURE 1: Using the Print Printer Options Borders command, you can retain row and column labels on each page. Make sure the print range does not overlap the border rows and columns.

Managing Multipage Reports

Some print ranges can't be squeezed onto one page but must be arranged into a multipage report. As **FIGURE 1** shows, if the print range is wider than the current margin settings will allow, *1-2-3* "slices" the worksheet into pages. So far, so good, but some pages will inevitably lack the labels needed to identify their contents.

With the *Borders* command, you can duplicate the labels in designated rows and columns at the top and left of each page of the report. To set the border row(s), place the cell pointer in the top row of labels and select */Print Printer Options Borders Row*. Use a similar procedure to set the border column(s); select */Print Printer Options Borders Columns*. Next, set the print range so that it doesn't include the border rows and columns (see **FIGURE 1**).

On a multipage report, you'll also want to include a header and/or footer to indicate the page number and to present other information. Select */Print Printer Options Header* (or *Footer*) and enter the header text. Use the vertical bar character (¦) to split the header text into flush-left, centered, and/or flush-right parts; use # to include the page number and @ to include the current date. For example, the header line **PCW, Inc.¦¦page #** produces the header shown in **FIGURE 1**.

Finally, you can control the report's page length using page breaks. To make a row in the print range appear at the top of a new page, place the cell pointer in that row in the leftmost column of the print range, and then select */Worksheet Page*. *1-2-3* inserts a row and places a special page break character in the cell (¦::). The new row doesn't appear on the printed report.

As bewildering as *1-2-3*'s print commands can seem to novices, they are really quite logical and consistent, once you understand the basics.

Richard Scoville and Ralph Soucie are contributing editors for PC World.

Data Basics

Data Management

Tips and techniques for managing your data

This month: structuring an efficient mailing list

Steve Cummings

Whether you run a corporate marketing campaign or a seat-of-the-pants mail-order business from your home, your direct-mail program is a key element in the enterprise's overall success. You'll get a lot more mileage from the software—and avoid time-consuming design overhauls down the road—if you plan your mailing list data base carefully at the outset.

Start by thinking through your overall mailing strategy. It's not wise to send every ad or newsletter to everyone on your list—you'll save money by targeting mailings to specific groups. To do this, you'll need additional information about the people and companies on your list, such as their income level and previous purchase patterns.

Once you know what you want, write down the specific fields your data base should contain and how large each field should be. Divide distinct items into separate fields—even if you won't use them right away. Here are some more tips for designing a mailing list data base:

- Create separate fields for the first and last name. Your data base program can't sort the names *Charles M. Jones* and *Fred Avery* by last name, and you'll alienate customers with letters that begin *Dear Mr. Freleng, Fritz.* Allow 25 characters for the last name and 15 for the first name and middle initial. A 4-character field will suffice for the title (Mr., Ms., and so on).
- Add a field for the recipient's formal title, and another for his or her company, university, or other affiliation. Assign 40 characters for each.
- You'll need more than one field for the street address, as some require additional lines for building numbers, department names, and other details. As a rule of thumb, two 40-character fields will do for a data base of home addresses, three for business destinations.
- For full sorting and selecting flexibility, use separate fields for city, state, and ZIP code. Allow 25 characters for the city field to avoid trouble with names like *Bellefontaine Neighbors.*
- A comments field lets you keep notes on your customers. Many data base programs offer variable-length memo fields for this purpose, giving you plenty of room to write. If your data manager lacks memo support, use a text

PARADOX SHORTCUT

Please Squeeze the Field

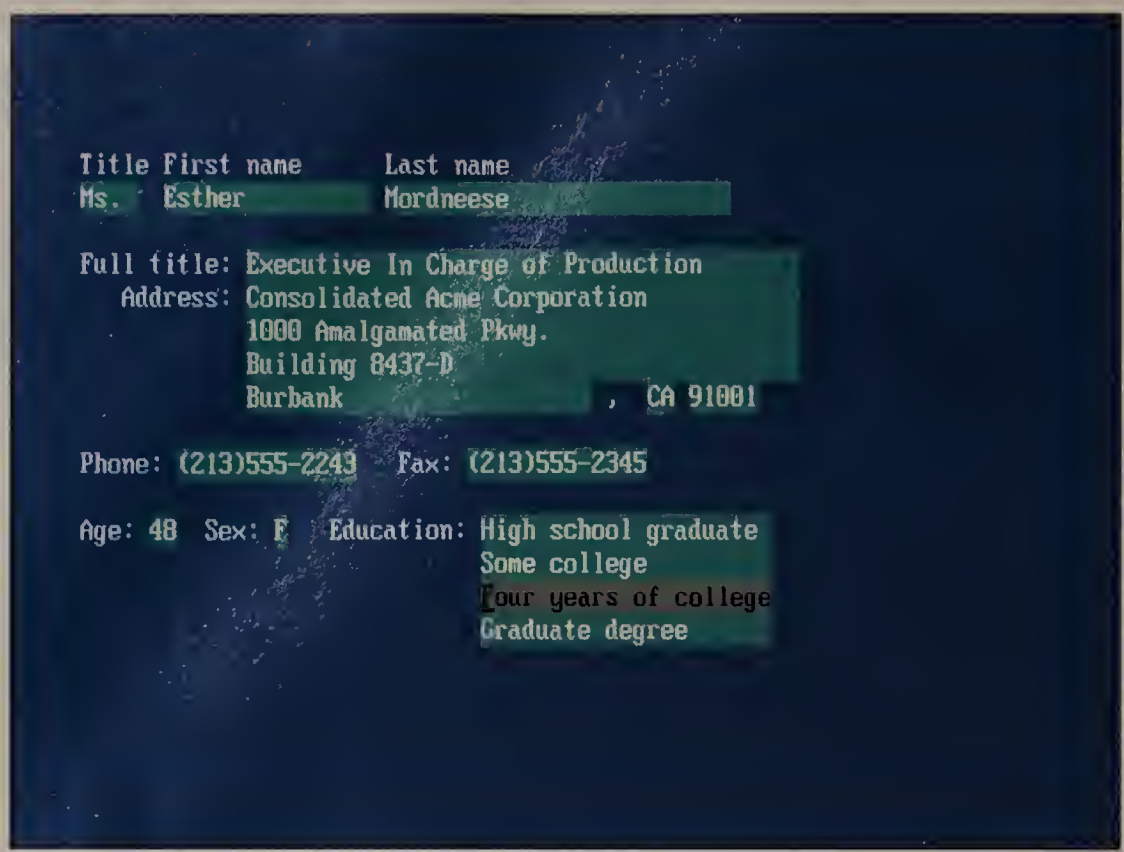
Celeste Robinson

How do you strip out the excess blank spaces when printing *Paradox* reports? You don't want reports with names like:

Eva Howard-Simpson

The easiest way is with the FieldSqueeze option. Place the First Name and Last Name fields side by side in a report form, with one blank space between them. With the cursor on the First Name field, press <**F10**>, and select *Setting RemoveBlanks FieldSqueeze Yes.* From then on, there will always be one space—and only one—between the names.

If you're short on space, FieldSqueeze has drawbacks. For instance, if you must print names in a 35-character box, you won't have room for a 15-character First Name, a space, and a 25-character Last Name. Making the two report fields shorter than their table fields will result in truncated names whenever a first or last name is long, even when the combined name fits in 35 characters. The solution? Use a calculated field in place of the other two. To create this field, press <**F10**>, select *Field Place Calculated,* type **[First Name]** + " " + **[Last Name]**, and press <**Enter**>. Only combined names longer than 35 characters will be truncated.



SCREEN 1: During data entry, a demographic data field like Education should be restricted to a few choices. Most data base programs offer a way to do this; some let you create pop-up menus.

field of about 200 to 300 characters.

- Any chance you'll be calling the people on your list? If so, you'll want one or more telephone fields (you may also need one for a fax number). The area code should go with the number, bringing the minimum length for the field to 10 characters.

Getting the Demographics

For selective mailings, you'll need to know more than names, addresses, and telephone numbers. Demographic data that describes your customers' age, sex, income, and education can help you decide whom to mail to. If you're selling to a corporate or institutional client, consider fields for the customer's primary business, number of employees, and sales volume.

Consistency is important with demographic data. It won't do to list one customer's education as *Four years of college* and another's as *Bachelor's degree.* Almost all data managers offer some way to restrict a field's contents to a set of choices, and most let you pop up multiple-choice pick lists so users can merely select from a menu (see **SCREEN 1**). Find out how to do this in your program, and set up your fields accordingly.

Information on recipients' past dealings with your organization is even more critical. Which products or services have they purchased from you? How much have they spent? Have they responded to previous mailings?

When you move to this level of complexity, a relational data base proves its worth over a flat filer. Because each customer can make any number of purchases, customer and sales information must be kept in separate tables. Only a system that can *relate* one table to another can look up a customer and his or her past purchases in a separate table.

Don't worry too much about having to change your mailing list design later. You can always add, delete, or reformat fields if you need to. Still, careful planning will help you avoid any wholesale restructuring and ensure that your data base contains all the information you need for effective direct mail.

Steve Cummings is the author of Mastering Quicken *(Sybex, Alameda, California, 1990). Celeste Robinson is the author of* The Best Book of Paradox *(Howard W. Sams and Company, Carmel, Indiana, 1990). Lincoln Spector is an assistant editor for* PC World.

DBASE SHORTCUT

The Two-Name Game

Lincoln Spector

When using separate fields for first and last names on your mailing list, the dBASE TRIM() function removes the unwanted blanks from the end of text fields. For instance, if you have a 15-space FName field, using the statement **FName + LName** for a report column's contents will print out this way:

Carla Stevenson

That's not the way to win new customers. If you use **TRIM(FName) + ' ' + LName**, however, all those unwanted spaces will disappear. (The "+ ' ' +" is needed to make sure one space remains between the names.)

When indexing, you'll want the last name first. Here, TRIM() isn't needed, since you're not concerned with the look of the index key, and the extra spaces don't affect the order of your sort—a simple **INDEX ON LName + FName TO Cu_name** will suffice. But if you're printing a list of names, last name first, use TRIM(), as in **TRIM(LName) + ', ' + FName.**

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Circle 33 on reader service card

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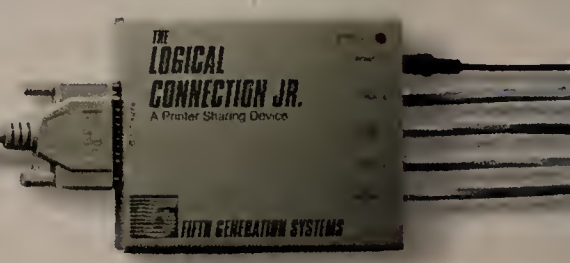

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Circle 235 on reader service card

The Art of Persuasion

Publishing & Graphics

Expert advice for creating high-impact documents and presentations

This month: making your documents picture perfect, and printing edge-of-the-page graphics with PageMaker

Richard Jantz

Sometimes, the easiest way to help employees or clients get the picture is to give them one. *Pictorial graphics* add life to text-heavy pages and help reinforce your document's message. Whether you're adding employee mug shots to an office newsletter or simple diagrams to a technical manual, the pictures you use play a big part in your document's success.

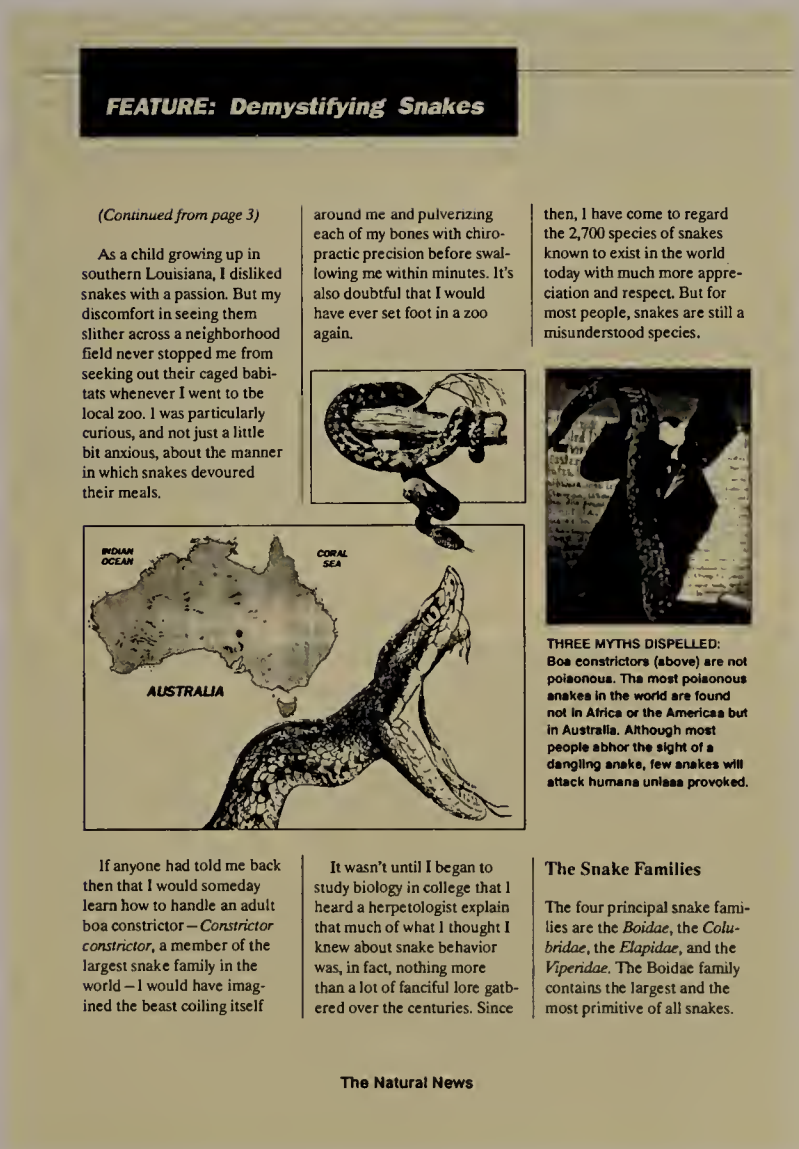
There are plenty of ways to get pictures into your documents and onto the page. You can create your own with programs like *Corel Draw* or *Publisher's Paintbrush,* or import ready-made images via a scanner or clip-art collection. You can print the images on the office laser or take them to a print shop for manual pasteup. No matter what methods you use, you'll need to choose an effective strategy for placing pictures on the page.

First, consider how readers will actually view your document. If your pages are bound and printed on both sides, treat each *spread* (opposing left and right pages) as a single unit, and lay out your pictures accordingly. Select pictures appropriate to your company's identity and the document's style and content. And finally, don't lard your document with images; if they don't help make your point, leave them out.

Here are some tips for placing and manipulating pictures.

- Formal business documents like training manuals demand a conservative tone. Keep pictures inside the page margins and align them consistently throughout.
- With less formal documents like newsletters, you can be more creative. Occasionally, positioning a picture to overlap the margins and gutters (spaces between columns) helps grab the reader's attention. For a three-dimensional effect, add a *drop shadow* (shaded box) under the picture.
- For dramatic impact, you can *bleed,* or extend, an image to the edge of the page, or tilt it at an angle. However, both effects may require manual pasteup, since laser printers can't print to the edge of a page and DTP programs can't tilt imported graphics.
- With multicolumn documents, picture width should correspond to col-

You Oughta Be in Pictures



FEATURE: Demystifying Snakes

(Continued from page 3)

As a child growing up in southern Louisiana, I disliked snakes with a passion. But my discomfort in seeing them slither across a neighborhood field never stopped me from seeking out their caged babitats whenever I went to tbe local zoo. I was particularly curious, and not just a little bit anxious, about the manner in which snakes devoured their meals.

If anyone had told me back then that I would someday learn how to handle an adult boa constrictor—*Constrictor constrictor*, a member of the largest snake family in the world—I would have imagined the beast coiling itself around me and pulverizing each of my bones with chiropractic precision before swallowing me within minutes. It's also doubtful that I would have ever set foot in a zoo again.

It wasn't until I began to study biology in college that I heard a herpetologist explain that much of what I thought I knew about snake behavior was, in fact, nothing more than a lot of fanciful lore gathered over the centuries. Since then, I have come to regard the 2,700 species of snakes known to exist in the world today with much more appreciation and respect. But for most people, snakes are still a misunderstood species.

THREE MYTHS DISPELLED: Boa constrictors (above) are not poisonous. The most poisonous snakes in the world are found not in Africa or the Americas but in Australia. Although most people abhor the sight of a dangling snake, few snakes will attack humans unless provoked.

The Snake Families

The four principal snake families are the *Boidae*, the *Colubridae*, the *Elapidae*, and the *Viperidae*. The Boidae family contains the largest and the most primitive of all snakes.

The Natural News

FIGURE 1: Pictures make your documents both livelier and more informative. This newsletter employs an asymmetrical layout, with pictures of different shapes and sizes, for greater visual impact. The headline is actually a Corel Draw graphic that's been bled to the top of the page (see "Nuts & Bolts" for a tip on how to achieve this effect).

umn width. In other words, pictures in a three-column newsletter should be one, two, or three columns wide.

- In a single-column document, place horizontal (wide) pictures at the top or bottom of a page, and vertical (tall) ones flush with the left or right margin. If a picture is less than half a column wide, wrap text around it or place a caption next to it. If the picture is wider than half a column, leave the area next to it empty. Avoid centering a picture with white space or text on both sides—a single block of space or text works better.
- When using several pictures on a page, make the most important image the largest. An exception to this rule: photos of speakers or employees of equal status.
- Symmetry is essential for designing airplanes, but it gets boring fast when you design documents. Instead of using the same size, shape, and placement for all your pictures, use asymmetrical layouts with contrasting shapes and sizes, as shown in **FIGURE 1.**
- Always consider the content of a picture when deciding its location. If a picture features a person facing toward the right, place it on the left side of the page to direct the reader's eyes toward the relevant text on its right.
- Pictures are usually more effective after they've been *cropped*, or trimmed to emphasize their most important details. For example, if your publication includes a series of photo portraits, cropping or resizing them so the faces match in size and eye level will produce a more balanced layout.

Finally, proofread your publication to ensure that each image is placed near related text and the captions match the pictures. And don't hesitate to drag out that old precomputer tool, the hand ruler, to check a picture's position and alignment.

PC World *contributing editor Richard Jantz is the author of* Ventura for Windows 3.0 *(John Wiley & Sons, New York, 1991).*

NUTS & BOLTS

Taking PageMaker Graphics to the Edge

A good way to add pizzazz to a pedestrian layout is by *bleeding*, or extending, a graphic to a page's outside edge. Bleeds can be used for simple design enhancement or for practical purposes, such as creating margin tabs to guide readers through a document.

But printing a bleed isn't easy. Even if you set the page margins at 0.00 inches, a laser printer automatically surrounds the page with a thin blank border. However, *PageMaker* users can employ a simple trick to create customized bleeds on the top and bottom of letter-sized pages (though not the sides or the corners). Here's how.

Set up your *PageMaker* document for a letter-sized page, and place the graphic so it overlaps the top or bottom edge. When you're ready to print, change the page setup to legal-sized, print the final copy on 8½-by-14-inch paper, and use a paper cutter to trim the excess. To make the job even easier, you can add dotted lines as a guide for trimming the page. —*R. J.*

DESKTOP PUBLISHING TOOLBOX

An Image Manager With a View

You know how tough it is to find the right illustration, scanned image, or other graphics file on a deadline. Now you can reach for Image-In's $99 *Panorama* and organize your image library into an on-line catalog.

This *Windows*-based image manager is a snap to use. Simply select *Add* image and click on the graphic file's name. *Panorama* creates a page containing a 200-by-200-pixel version of the image, then prompts you for up to 16 keywords and a 254-character description. You can view up to five pages at once, search for files via keywords or file format, and print out catalog text (but not images). To import a graphic, simply use the Edit menu to copy the file name to the Clipboard, then paste it into your document.

Panorama supports many popular graphics file formats, but not CGM or EPS. Unless you need to print a lot of PostScript graphics, *Panorama* gives you the big picture on your image library. —*R. J.*

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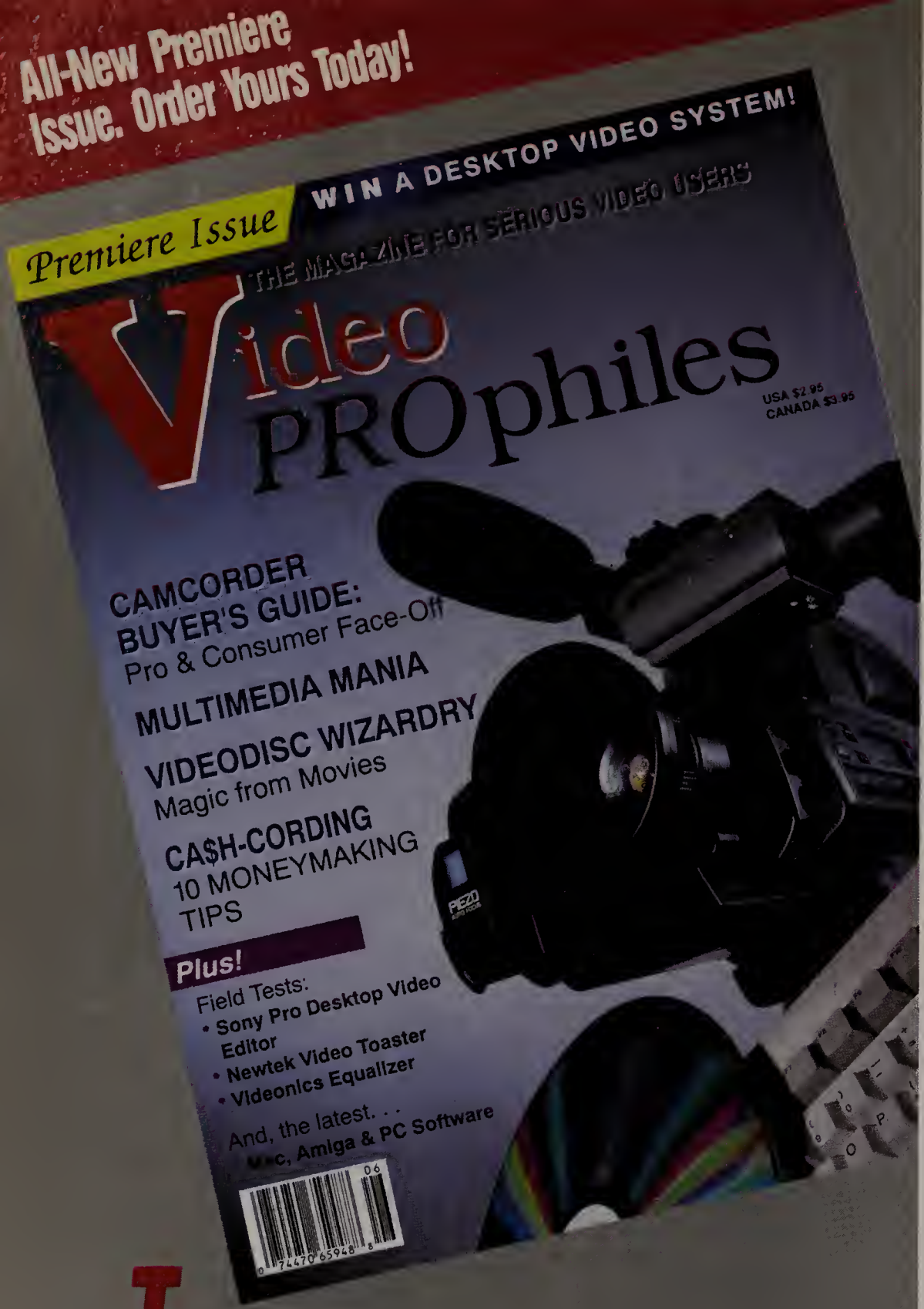

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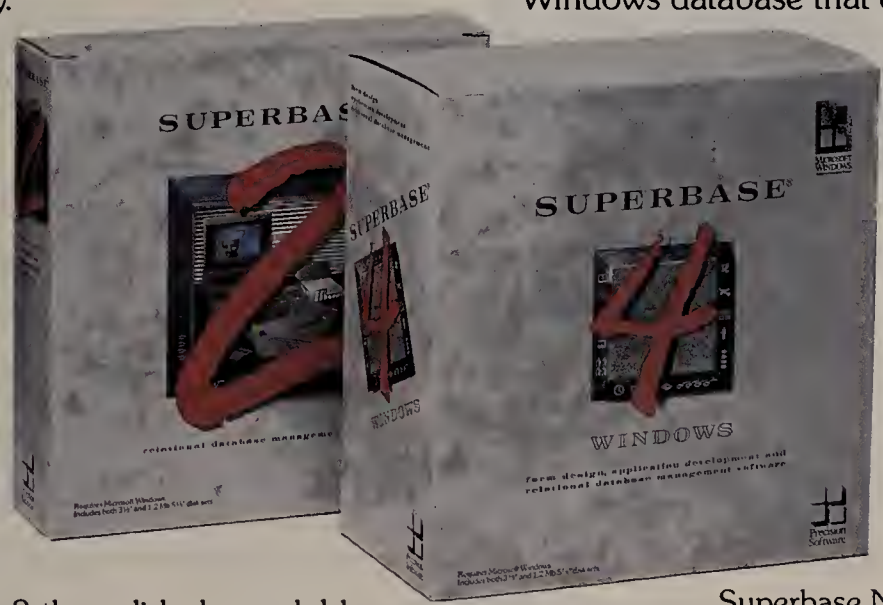

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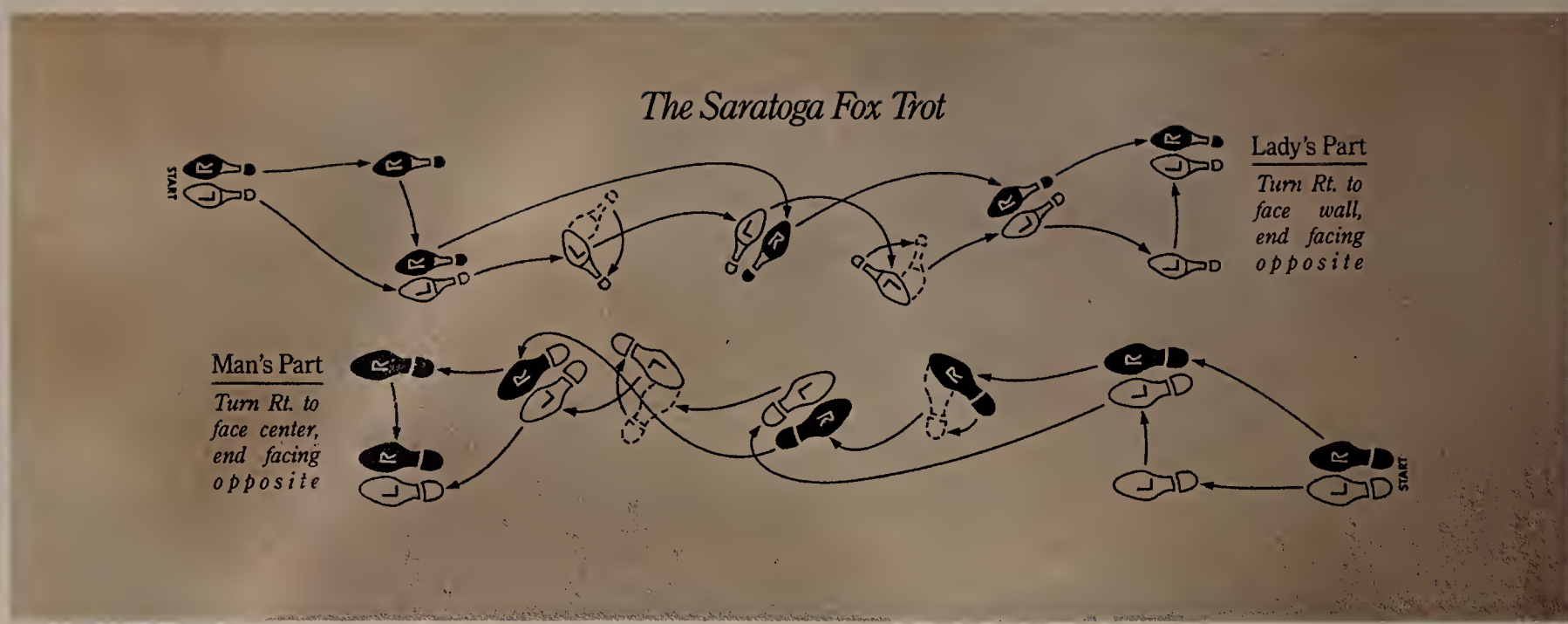

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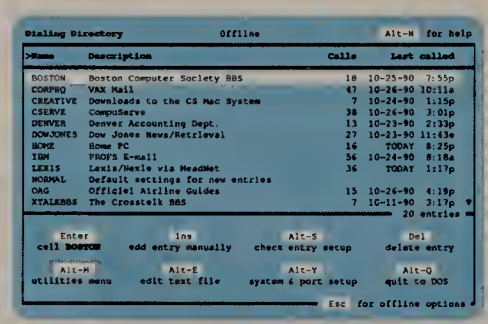

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The Information Edge

Communications

On-line resources for business and professional users

This month: Join in a freewheeling global town square with Usenet, the largest network in the world, and polish your financial portfolio with Telescan.

Judy Heim

If Big Brother exists, he must spend many a sleepless night worrying about Usenet. This anarchic global information network is a celebration of free speech, unmuzzled information flow, and everything else that would curl the toes of a totalitarian.

No central organization owns or governs Usenet, yet the network grows and grows of its own momentum, linking universities, corporations, research centers, nonprofit groups, government agencies, hospitals, and public-access BBS's. No one knows for sure, but it has been estimated that Usenet has 33,000 nodes and more than 6 million users, making it the largest computer network in the world.

Few countries are safe from Usenet, not even the Soviet Union, although several governments attempt to censor its content. Its corpulent bit stream snakes around the world and swells with each passing month, causing nodes to crash from overload and fueling speculation that the network itself is on the verge of tumbling.

A Focus on Computing

Usenet began a decade ago as a forum for academic UNIX hackers and evolved into a more general conferencing system. It's chatty and clamorous, and its users don't suffer from lack of contentiousness. Over 650 public conferences are available, but the exact number ebbs and flows according to the whims of the users. Conferences are created or dissolved with a haphazard democracy—sometimes users vote, sometimes they lobby, occasionally someone just barges in and creates a new one.

Usenet's primary focus is still computers, with conferences for every programming language, computer, and popular application in existence. UNIX is still the chief topic, but more and more of the conferences focus on *Windows,* personal computers, and public domain software. Software libraries are also available.

Next to computers, science is the main draw, with many international debates devoted to hot topics like scientific ethics. Usenet is also a hotbed of debate on social and political issues, such as Middle Eastern politics, and there's the usual mix of hobbyist groups devoted to travel, cars, science fiction, and other such topics. Currently there are few business-specific conferences, but the one containing job listings is extremely popular.

Although Usenet per se does not offer the ability to send private E-mail, many Usenet nodes offer links to the international E-mail network Internet, which lets you send mail to just about any E-mail address in the world, including to MCI Mail addresses and CompuServe users.

So how do you tap in? If you lack access to a business or academic computer that's already tied into Usenet, you'll need to seek out one of the roughly 100 public-access Usenet systems that have cropped up across the United States over the last few years. These systems range from casually run BBS's that offer a sprinkling of Usenet conferences to commercial on-line services like Portal that provide close to the full deck.

Most of the services are blighted by Usenet's own menuless UNIX interface, but Usenet's excellent built-in help makes navigation reasonably easy. A typical service is the Milwaukee Information Exchange, which offers the com-

ON-LINE SHORTCUT

Don't Compress Compressed Files

If you own a modem with built-in data compression (MNP-5 or V.42bis), be sure to turn off the compression when downloading files that have already been compressed with utilities, such as ARC and ZIP. Sending or receiving a previously compacted file with a data-compressing modem takes more time than transmitting that file without the compression. Check your modem manual for instructions on how to turn off your modem's compression. —*J. H.*

THE PROFESSIONAL EDGE

Hunting for Investments With Telescan

Joel Tepp

Sniffing out good investments is like spotting mushrooms in tall grass. Where one person sees nothing, another might spot a dozen succulent chanterelles. Everything depends upon the angle from which you look. Telescan is a veritable financial spy satellite that lets you hunt for data and view it from myriad vantage points.

Telescan provides on-line prices for stocks, options, mutual funds, and futures contracts and also offers market averages. Prices go back as far as 1973; some are only 15 minutes old. In contrast to services like Dow Jones that let you download reams of numbers, Telescan presents them to you in charts, accompanied by the graphic indicators you select.

Telescan also gives you the meat of company reports, such as information on cash flow, capital spending, and earnings, plus a half-dozen investment newsletters, including the prestigious *Princeton Portfolios.* You can also tap into gateways to 850 business-related data bases including those of Dow Jones News/Retrieval and Standard & Poor, and you can attend regular real-time forums that feature investment gurus like Gerald Appel.

To dial Telescan, you need a copy of the *The Analyzer,* which lists for $99.95. Part communications package, part charting software, *The Analyzer* lets you dial the service manually, or you can set it up to automatically gather, chart, and print selected data and prices on a daily, weekly, or monthly basis. Once the data is captured, you can change and redraw the indicators as often as you like. Unfortunately, you can't export data to other applications for further analysis or charting.

Downloading a single chart of data will run you about $3—that includes a $2 search surcharge, a 10 cent per-graph surcharge, and on-line costs that run $36 per hour during prime time and $18 per hour in the evening. That's a good deal compared to a quote vendor like Warner Data, where a two-year price history on a single issue runs $3 to $5. Telescan's only other charges are a $25 annual fee and a $1 to $2 surcharge if you use the stock screening feature. For $45 a month, you get unlimited evening access.

The Analyzer's superb stock charting skills rank with those of Equis International's *Metastock.* While *The Analyzer* offers only half as many indicators, it includes all the essential ones and lets you store a virtually unlimited number of stock names for downloading. *The Analyzer* also provides four add-on modules that you can call from its menus. The powerful $695 *ProSearch* lets you define performance criteria of stocks, such as price/cash flow ratio; it then searches Telescan's data base of 11,000 stocks to find matches and lists them by rank. *The Edge* ($295) does the same thing, but with half the search criteria, and *Mutual Fund Edge* ($295) does the same for mutual funds. *Telescan Portfolio Manager* ($495) aids in managing portfolios.

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plete gallery of Usenet conferences for $5 a month. For $10 a month plus Telenet access fees, Portal offers a menu front end, but it's not much of an improvement over UNIX.

If you represent a business or institution that wants to acquire a direct Usenet feed, contact UUNET Technologies in Falls Church, Virginia, at 703/876-5050 (voice). Individuals should check local PC or UNIX user groups to find the closest Usenet system. Here are a few: Chinet, Chicago, 312/283-0559 (data); Magpie, New York, 212/420-0527 (data); Ozdaltx, Dallas, 214/247-2367 (data); People-NET, Minneapolis, 612/473-2295 (data); Polari, Seattle, 206/367-3837 (data); Portal, Cupertino, California, 408/973-9111 (voice), 408/725-0561 (data); The Milwaukee Information Exchange, 414/241-5469 (data).

Computers? Science? Politics? You name it. If you want to know what's *really* happening around the world, Usenet is highly recommended.

Judy Heim is a contributing editor for PC World. *Joel Tepp is a broker with Bateman Eichler, Hill Richards in Seattle, Washington.*

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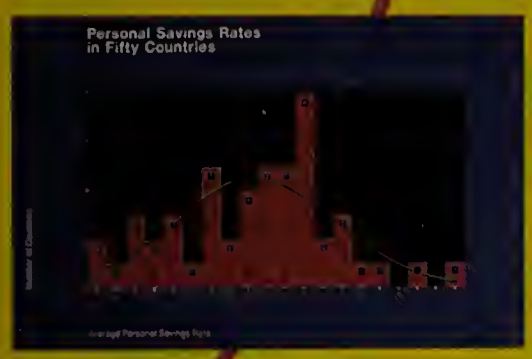

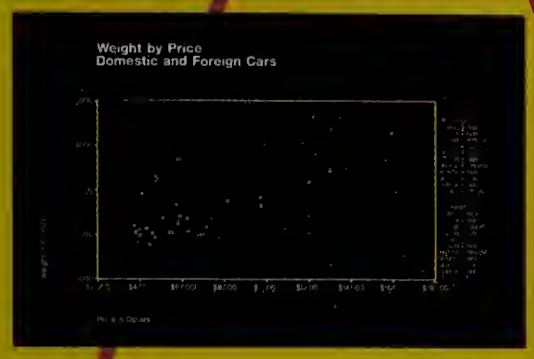

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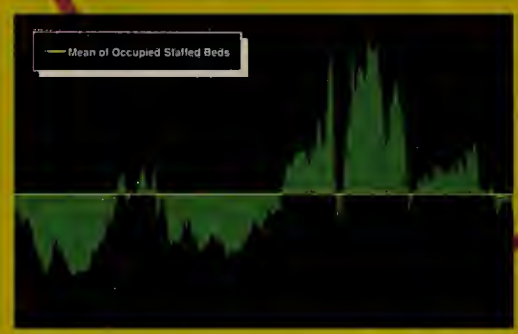

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User Group Tips

Helpful hints from members of the nation's user groups

SHARE Clears Up Problems When AutoCAD Runs Under DOS 4.xx

I recently upgraded from a PC running DOS 3.3 matched with a 30MB hard disk to a machine using DOS 4.01 and an 80MB hard drive. On my old machine, *AutoCAD 10* was heavily customized to incorporate symbol insertion through my tablet menu. Problems cropped up as soon as I moved my *AutoCAD* system to the single 80MB partition. For instance, the INSERT command would produce a 'cannot open file' message when I tried to access a symbol located outside the current directory. I consulted with other experienced *AutoCAD* users without success, and all my experimentation was fruitless until I heeded the system boot-up message warning that SHARE must be loaded for large partitions. Like a lot of people who aren't on a network, I'd always ignored the message because I didn't want to give up a piece of conventional RAM to another memory-resident program. But as soon as I placed the line **install =c:\dos\share.exe** in my AUTOEXEC-.BAT file and rebooted my computer, my *AutoCAD* problems disappeared. So the common wisdom that SHARE is just for networks isn't so wise when using *AutoCAD 10* in a large partition under DOS 4.01. *AutoCAD* uses a lot of temporary files, so to avoid further eventual problems, place the line **fcbs=48,8** in your CONFIG.SYS file. This instruction allows *AutoCAD* to access up to 48 temporary files and requires DOS to keep 8 of them open.

Ranjit S. Sahai
Capitol PC User Group

A Little Bit More

"MORE Automation" in October's *User Group Tips* can be improved. The suggested command **type** *filename* | **more** is a slow, inefficient way to use MORE to present a text file a screenful at a time. It runs two commands and requires the creation of a pipe, causing disk writes and holding up the MORE invocation until the TYPE command is finished. The process is further slowed if you include this command in a batch file. It's more efficient in terms of keystrokes and time simply to type **more** > *filename*. This way, you achieve the same effect and run only one command without having to create a pipe.

Bob Weissman
Mountain View, California

An Easy First Choice With Paradox

If you ask for a list of tables while you're viewing a *Paradox* table, that table will be listed first, and any action you request will happen to that table unless you specify otherwise. This "automatic first choice" arrangement can be useful. After a query, I often want to rename the Answer table to protect it from deletion when I exit *Paradox*. To do this the quick way, I press <**F10**> to bring up the menu, **t** to select Tools, <**Enter**> twice to select Rename and Table, <**Enter**> again to display the list of tables, and <**Enter**> once more to select Answer, the automatic first choice. This sequence delivers me to the prompt to type in the new name for the table.

Brian J. Smith
Southern California Paradox Users Group

Speed Loading in Ventura Publisher

If you're using a 286 or slower machine to work on several large chapters in *Ventura Publisher 2.0,* you can speed loading by saving each chapter in a separate subdirectory along with its own VP.INF file. By default, *Ventura* saves VP.INF in the Ventura subdirectory, and each time a new chapter is loaded, *Ventura* overwrites the existing VP.INF, thereby slowing the process. But you can save VP.INF in any subdirectory you wish by using a command line switch.

You'll need to alter the line in VP.BAT that contains the DRVRMRGR command to include the variable %1, which will represent the path of the subdirectory containing the chapter you wish to load, and the variable %2, which will represent the chapter you wish to load. Then your DRVRMRGR line will begin with **DRVRMRGR VP %1\%2** (**DRVRMRGR VPPROF %1\%2** with the Professional Extension) and be followed by the switches for your screen driver and mouse. At the end of the line, place the switch **/I=%1**, which will force *Ventura* to save the INF file in the subdirectory containing your chapter file. When you load *Ventura*, begin the command with **vp** (or **vpprof**, depending on your version), followed by the path, a space, and the file name of the chapter you want to work on. Ventura Software recommends that you always work from your hard disk, and unfortunately this speed-loading technique won't work with chapter and INF files created on a floppy disk.

Paul Stephen
Newsletter Editor
Winnipeg PC User Group Inc.

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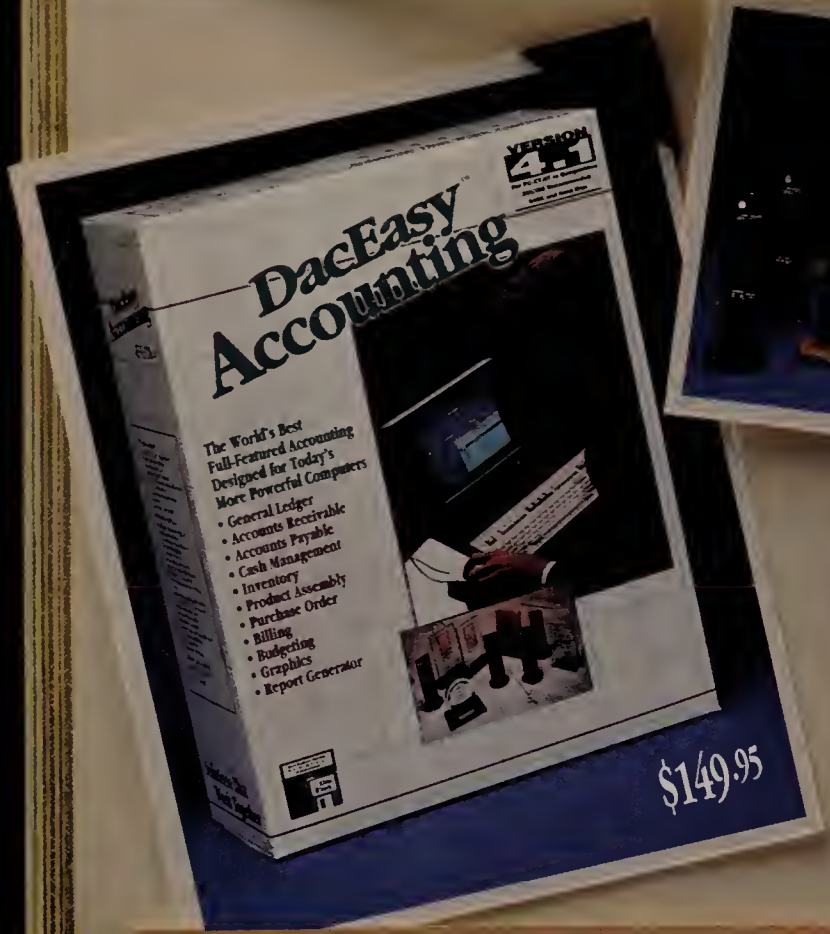

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PC Magazine, April 10, 1990

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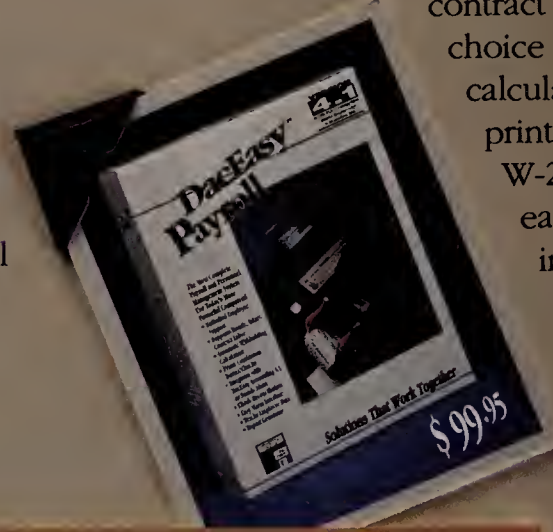

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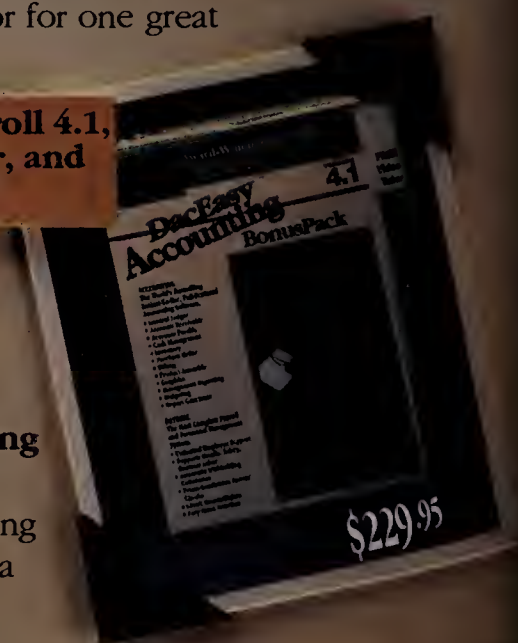

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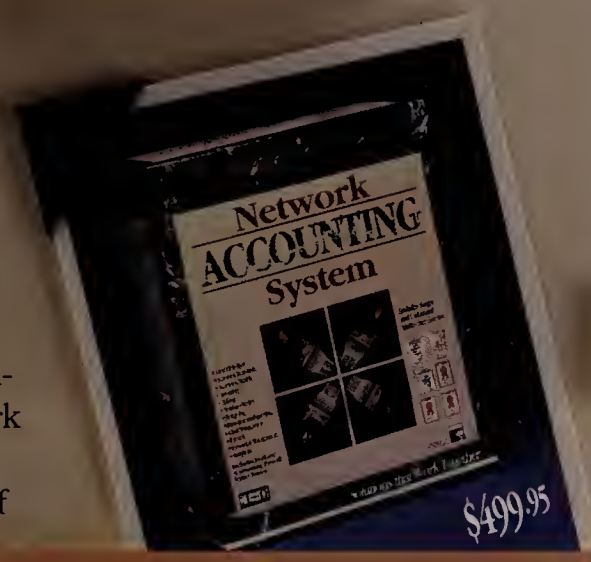

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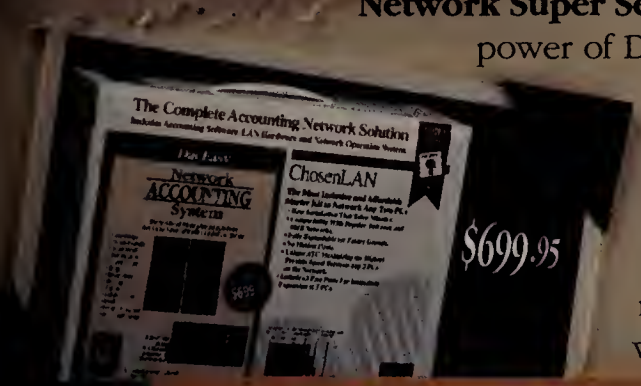

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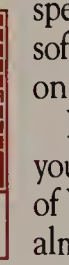

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Use Turbo Pascal to create a one-shot DOS prompt for Windows, profile BASIC code for faster performance, read key presses in batch files, and check out a macro that adds check boxes to WordPerfect documents.

Edited by Tom Swan

One-Shot DOS Prompt for Windows

I'm a *Windows* fan, but I miss having a DOS prompt immediately available. When I need to type an ASCII file or list a directory, I use a *Turbo Pascal* program, ONESHOT.PAS [see **LISTING 1**]. The program works like Program Manager's and File Manager's RUN options but is easier to use and recognizes built-in DOS commands like DIR and COPY.

C. D. Pirkey
St. Louis, Missouri

Editor's note: Although you can open a DOS Prompt window to issue DOS commands, that window will stay open until you close it. ONESHOT is ideal for any once-and-done DOS command.

I added several extensions to Mr. Pirkey's original submission. Like COMMAND.COM and the PROMPT PG command, ONESHOT displays the current directory within the command prompt. A double greater-than symbol (>>) reminds you that this is not the usual DOS prompt. After you type a response, ONESHOT executes built-in DOS commands directly. For other commands, ONESHOT searches (continues)

```
{$M $2000,0,0 }
program OneShot;
uses crt, dos;
const
  DOSCMDS =
  'BREAK CHDIR CD CLS COPY CTTY DATE DEL DIR EXIT ' +
  'MKDIR MD PATH PROMPT RENAME REN RMDIR RD SET ' +
  'TIME TYPE VER VERIFY VOL';
var
  i : integer;
  command, name, options : string;
begin
  getdir(0, command);
  write(command, '>>');
  readln(command);
  for i := 1 to length(command) do
    command[i] := upcase(command[i]);
  i := pos(' ', command);
  if i = 0 then i := length(command) + 1;
  name := copy(command, 1, i - 1);
  options := copy(command, i + 1, 255);
  if pos(name, DOSCMDS) = 0 then
  begin {- Not a DOS command. Search PATH. }
    command := name;
    name := fsearch(command, getenv('PATH'));
    if length(name) = 0 then
      name := fsearch(command + '.COM', getenv('PATH'));
    if length(name) = 0 then
      name := fsearch(command + '.EXE', getenv('PATH'));
    if length(name) = 0 then
      name := fsearch(command + '.BAT', getenv('PATH'))
  end;
  swapvectors;
  exec(getenv('COMSPEC'), '/C ' + name + ' ' + options);
  swapvectors;
  gotoxy(0, 24);
  write(#13#10'DOS error = ', doserror, ', exit code = ');
  write(dosexitcode, '. Press <Enter>...');
  readln
end.
```

LISTING 1: Compile ONESHOT.PAS using Turbo Pascal 5.5 or 6.0 to create a one-shot DOS prompt for Windows.

ANTHONY RUSSO

the current PATH for a COM file, an EXE file, or a BAT file, in that order. You can override this search order by including the file name's extension—MYPROG.EXE, for example.

After compiling ONESHOT with Turbo Pascal 5.5 *or* 6.0, *open File Manager, locate ONESHOT.EXE, and drag it to a Program Manager group window. To use ONESHOT, select its icon and type any DOS command or program name at the resulting prompt. After the command finishes, ONESHOT reports the current DOS error- and exit-code values, or '0' if no problems were detected. Press* <Enter> *to return to* Windows.

If ONESHOT's window stays visible, press <Alt>-<F4> *to close it, start the* Windows *PIF Editor, open _DEFAULT.PIF, and then check the box labeled 'Close Window on Exit'. After you have made this change, ONESHOT's window will disappear automatically.*

BASIC Profiles

To time BASIC routines, I wrote PROFILE.BAS [see **LISTING 2**]. The program runs a profiling subroutine that times up to 100 elapsed repeats of any instruction.

To profile a program, copy the subroutine (lines 9000 through 9250) to your own code. (Lines 1100-1999 are included here only to demonstrate the profiler.) Near the beginning of your program, dimension an array PFACCUM!(100), set PFPOINT% to 0, and execute GOSUB 9000 as PROFILE.BAS does at lines 1100 through 1200. Then, at strategic locations, set PFPOINT% to a number between 1 and 99, and execute GOSUB 9000. (See lines 1250 through 1600 for examples of these steps.) The profile numbers do not have to be in sequence.

To display results for profiled points, set PFPOINT% to 100 or higher, and execute GOSUB 9000 as in line 1900. Once you have done that, any future calls to the profiler subroutine will be ignored.

Precision is limited to the smallest fractions of seconds that TIMER provides. Short sequences may run so fast that they won't show in the report. Therefore, to profile a single statement, you may have to insert it into a FOR loop that cycles at least 1000 times.

Gil Gagnon
Mississauga, Ontario, Canada

Editor's note: Use the profiler's report to find where your code spends the bulk of its time. By optimizing the most heavily traveled sections, you'll gain the greatest speed advantage with the least amount of work.

Because PC clocks are imprecise, you may receive different results for the same program profiled twice in succession. For better accuracy, profile your code three or more times and average the reported values.

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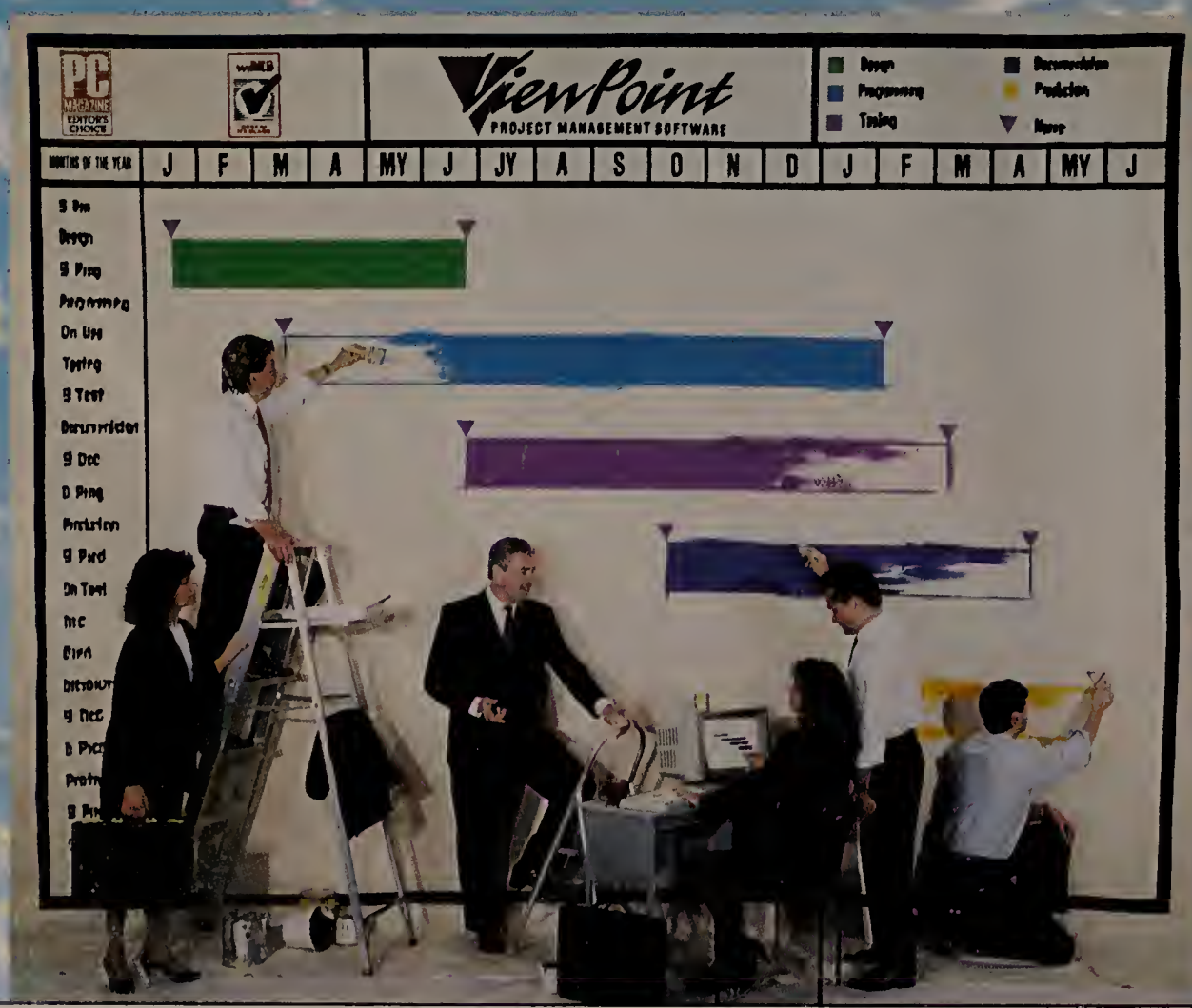

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```
1100 DIM PFACCUM!(100)
1200 PFPOINT% = 0: GOSUB 9000
1250 PRINT "Test loop #1"
1300 FOR N = 1 TO 10000 : NEXT N
1400 PFPOINT% = 1: GOSUB 9000
1450 PRINT "Test loop #2"
1500 FOR N = 1 TO 5000 : NEXT N
1600 PFPOINT% = 2: GOSUB 9000
1900 PFPOINT% = 100: GOSUB 9000
1999 END
9000 IF PFFIRST% = 1 THEN GOTO 9050
9010 PFFIRST% = 1
9020 PFEND% = 0
9030 PFTIMELAST! = TIMER
9040 PFLBL$ = "Elapsed time for point"
9050 IF PFEND% <> 0 THEN GOTO 9250
9060 PFTIME! = TIMER
9070 IF PFPOINT% > 99 THEN PFPOINT% = 99
9080 PFACCUM!(PFPOINT%)=PFACCUM!(PFPOINT%)+PFTIME!-PFTIMELAST!
9090 PFTIMELAST! = PFTIME!
9100 IF PFPOINT% <> 99 THEN GOTO 9250
9110 PFEND% = 1
9120 FOR PFPOINT% = 1 TO 100
9130 IF PFACCUM!(PFPOINT%) = 0 THEN GOTO 9140
9135 PRINT PFLBL$; PFPOINT%; ":"; PFACCUM!(PFPOINT%)
9140 NEXT PFPOINT%
9250 RETURN
```

LISTING 2: PROFILE.BAS tests the profiler subroutine at lines 9000 through 9250.

Skeleton Key

DOS lacks a batch-file command for reading key presses, so I wrote my own. KEY.COM is like a skeleton key that can unlock the keyboard for any batch file.

In a batch file, feed KEY a set of characters in commands like **key ynq** or **key 01234**. If you type just **key**, the characters default to YN.

KEY waits for you to type a character. The program sets ERRORLEVEL to 0 for the first character, 1 for the second character, and so on. For the command KEY YNQ, pressing Y, N, or Q sets ERRORLEVEL to 0, 1, or 2, respectively.

Wong Choong Sheong
Selango, West Malaysia

*Editor's note: At the end of X-MAKER2.BAS (**LISTING 3**), add the DATA statements from **LISTING 4**. Run the result in BASIC to create KEY.COM, which you can copy to a*

(continues)

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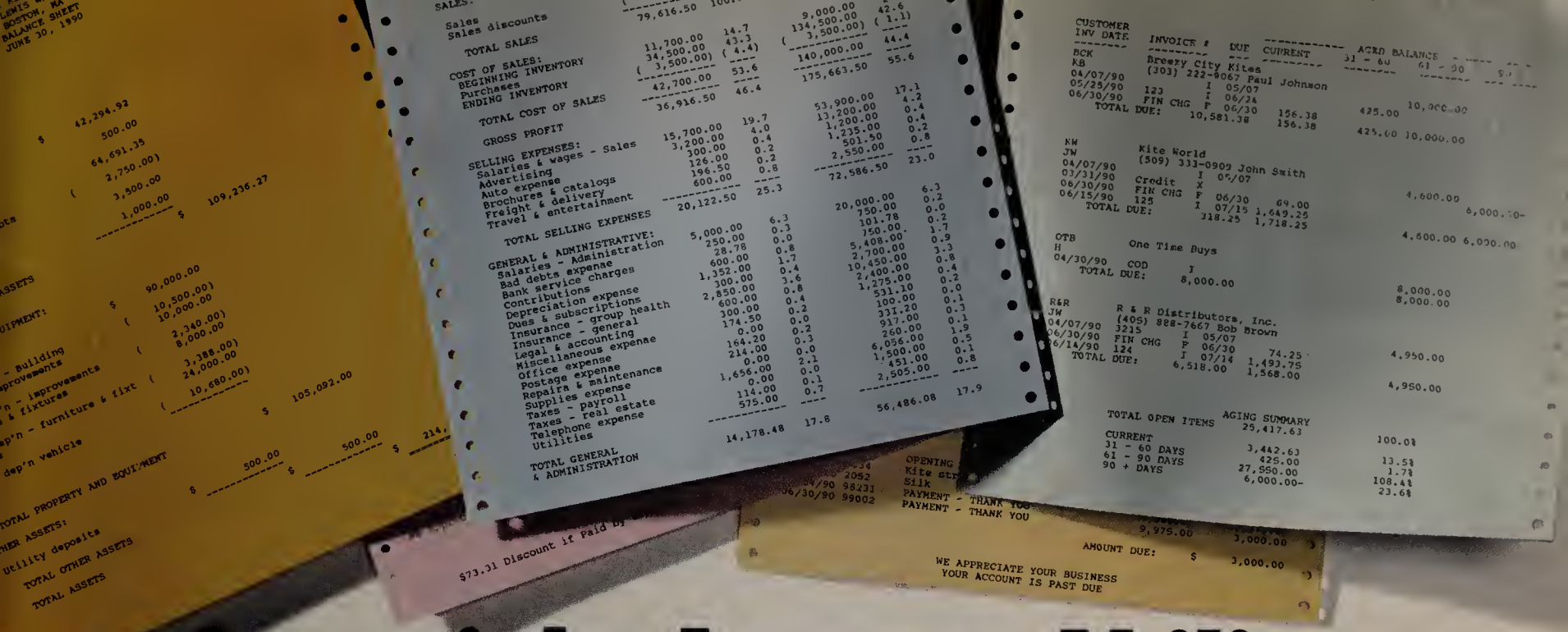

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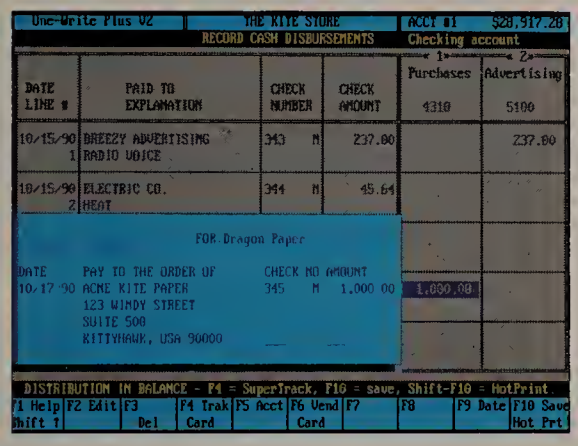

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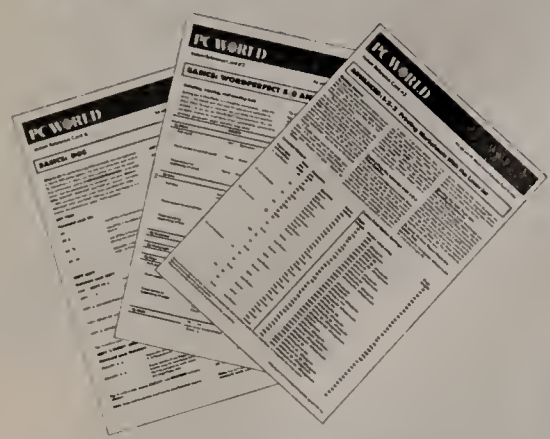

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```
10 DEFINT A-Z:CLS:KEY OFF:DEF FNHEX(X$)=VAL("&h"+X$)
20 MSG$="Now testing for data errors...please wait" : GOSUB 190
30 SUM=0:READ LN:IF LN<0 THEN 80
40 READ H$:IF VAL(H$)<0 THEN 70
50 IF LEFT$(H$,1)="*" THEN GOSUB 210 : GOTO 40
60 SUM=(SUM+FNHEX(H$))*2:SUM=(SUM\256)+(SUM MOD 256):GOTO 40
70 READ CKSUM$:IF (SUM MOD 256)=FNHEX(CKSUM$) THEN 30 ELSE GOTO 170
80 MSG$="Press any key except ESC to create "+F$+": "
90 GOSUB 190 : A$=INPUT$(1) : PRINT : IF A$=CHR$(27) THEN END
100 LOCATE 6,1:PRINT "Working...";
110 OPEN F$ AS #1 LEN=1 : FIELD #1,1 AS BX$
120 READ LN:IF LN<0 THEN 160
130 READ H$:IF VAL(H$)<0 THEN READ CKSUM$:GOTO 120
140 IF LEFT$(H$,1)="*" THEN GOSUB 240 : GOTO 130
150 LSET BX$=CHR$(FNHEX(H$)) : PUT #1 : GOTO 130
160 CLOSE:PRINT:PRINT F$;" has now been created.":END
170 PRINT:PRINT "Error in DATA line";STR$(LN);".";
175 PRINT:PRINT "SUM=";SUM
180 PRINT "Check your work.":BEEP:END
190 CLS : LOCATE 3,1 : PRINT "X-Maker II" : RESTORE : READ F$
200 LOCATE 5,1,1 : PRINT MSG$; : RETURN
210 ZZ=VAL(MID$(H$,2)) : FOR I=1 TO ZZ
220 SUM=SUM*2 : SUM=(SUM\256)+(SUM MOD 256)
230 NEXT : RETURN
240 ZZ=VAL(MID$(H$,2)) : FOR I=1 TO ZZ
250 LSET BX$=CHR$(0) : PUT #1 : NEXT : RETURN
```

LISTING 3: X-MAKER2.BAS, *.*'s program-making program.

```
1000 DATA "key.com"
1010 DATA 1,33,C9,BB,80,00,8A,0F,43,E3,07,80,3F,20,75,0A,E2,-1,39
1020 DATA 2,F6,B2,02,C7,07,59,4E,EB,15,8A,D1,8B,FB,8A,05,3C,-1,F6
1030 DATA 3,61,72,08,3C,7A,77,04,24,5F,88,05,47,E2,EF,B4,07,-1,3C
1040 DATA 4,CD,21,3C,61,72,06,3C,7A,77,02,24,5F,8B,FB,8A,CA,-1,9C
1050 DATA 5,F2,AE,75,EA,4F,8B,C7,2B,C3,B4,4C,CD,21,-1,19,-1
```

LISTING 4: Merge these DATA lines with X-MAKER2.BAS (LISTING 3) to create KEY.COM using BASIC.

```
echo off
echo Press Y, N, or Q.
key ynq
if errorlevel 2 goto QUIT
if errorlevel 1 goto NO
rem -- errorlevel is 0
echo "Yes"
goto END
:NO
echo "No"
goto END
:QUIT
echo "Quit"
:END
```

LISTING 5: TESTKEY.BAT demonstrates how to use KEY.COM. It will ask you to press Y, N, or Q; then it will confirm that the batch file read your keystroke correctly.

directory listed in the current PATH.

KEY ignores case. The commands **key AbC** *and* **KEY aBc** *are functionally identical. For a sample of how to use KEY, run TESTKEY.BAT (see* **LISTING 5***). Press* **y**, **n**, *or* **q**, *and the program will display 'Yes', 'No', or 'Quit', proving that KEY returned the correct values to the batch file.*

Checkers Anyone?

My wife creates checklists in *WordPerfect 5.1* documents, but creating the check-mark boxes one at a time is tedious. To speed the process, I wrote a macro that automatically adds boxes to optionally numbered paragraphs.

(continues)

PC WORLD

Instant Reference Card #11

For use with PC World Instant Reference Card Portfolio

BASICS: CROSSTALK MK.4

SETUP AND OTHER BASICS

What to do: The following ore the mast frequently used commonds in *Crosstolk Mk.4* version 2.0. They are accessible at olmost ony point in the program. Yau can olso apt to enter CASL commands directly on the command line, lood on aptianol *Crosstolk XVI* interfoce, or laad the original version 1.x menuing system. This guide, however, cancentrotes on version 2.0's <Alt>-key interface.

Many af these commands help yau set up *Crosstolk* to work with your computer, modem, and remate service. The defoult settings will work fine far mast users.

Function	Keystrokes
Help	**<Alt>-H**
Help Index	**<Alt>-H<Ctrl>-<Page Up>**
Access mocro/script menu	**<Alt>-M**
Edit a text file	**<Alt>-E**, enter file nome ta edit
Browse/view files on disk	**<Alt>-M**, use cursor keys to select Browser, **<Enter>** **<Enter>**, type o file name to view, or **<Page Up>** to select file from directory
Issue o DOS cammond	**<Alt>-M**, use cursor keys to select DOSmenu, **<Enter>**
Quit the progrom	**<Alt>-Q**
Set part, speed, or onother porometer	**<Alt>-S<Tab>**, cursar ta desired fields
Enter or edit function-key definitions	Cursor to desired dialing directory entry, **<Esc><Alt>-K**
Select a terminol emulotian	Cursor to dioling directory entry, **<Esc><Alt>-T**
Define or chonge the porometers for uplaading text files	**<Esc><Alt>-U**
Set user preference (such os color)	**<Alt>-Y**

Tip: During instollotion, *Crasstolk* will ask whot COM port your modem is ottoched ta. If you dan't know, just guess. In most coses, it's either 1 or 2, but you moy have three or four ports. If you select the wrong port, the error messoge 'Modem not respanding' will display when yau ottempt ta make o coll.

DIALING

What to do: Use these commonds ta creote or modify entries in the dioling directary. Select the Eosycoll entry to creote o directory entry, ond either madify one of the prewritten setup files for mojar an-line services or, if na setup file is included for the system, step thraugh the pracess af moking the coll.

Function	Keystrokes
Moke o coll	Cursor to desired entry, **<Enter>**
Create o new entry	Cursor to Eosycoll, **<Enter>**; or press **<Insert>**
Mave to next entry	**<Cursor Down>**
Move ta previous entry	**<Cursor Up>**
Mave ta first entry	**<Home>**
Move to lost entry	**<End>**
Mave ta next poge of entries	**<Page Down>**
Mave ta previous page of entries	**<Page Up>**
Jump ta on entry	Enter first letter of entry nome
Modify on entry	Move to entry, **<Alt>-S**

DIALING (continued)

Delete on entry	Mave ta entry, **<Delete>**
Change dioling directory disploy	**<Alt>-Y**, cursor ta BaokMade field, press **<Space>** until screen displays desired fields (name, number, etc.), **<Ctrl>-<Enter>**

Note: Before you creote on entry, you should hove the following infarmatian reody: the telephone number, modem speed in per bits per second (bps), ond the user ID ond possword. You'll olso need to knaw the terminol emulotion—if in doubt, try ANSI, used on CompuServe, MCI Moil, and mast BBS's. If thot's nat it, try TTY or DEC VT-100. Finolly, you'll need to know theWordFormot—the dato bits, pority, and stap bits used by the two madems. It's usuolly seven doto bits, even parity, and one stop bit (7-E-1) or eight dato bits, no pority, ond one stop bit (8-N-1).

Tip: The Outnumber ond LDnumber (lang distance number) settings on the Setup screen **(<Alt>-Y)** contoin useful dioling prefix settings. You con use the Outnumber to stare o 9 (or onother number) to breok aut of o PBX system and get on outside line. You can use LDnumber to store the 1 thot's used to diol long distonce. You'll probobly want to ploce o commo ofter the 9 ond after the 1—eoch commo tells the madem to wait 3 seconds before dioling the next number.

Fold Here

Fold Here

ON LINE

What to do: This section covers the <Alt>-key shortcuts for common tosks used during o cammunicatians sessian. If you prefer, you con olways use the an-line menu (**<Alt>-<F10>**) instead and simply fallow the prompts.

Tip: To sove on connection chorges, don't edit, create, ond reod messoges while on line; creote files while off line, ond copture messages to disk **(<Alt>-C>)** so you can read them ot your leisure when you ore no longer connected.

Function	Keystrokes
Access the an-line menu	**<Alt>-<F10>**
Capture text ta printer, ar stap capture	**<Alt>-S<Tab>**
Copture text to file, ar stap copture	**<Alt>-C<Space><Ctrl>-<Enter>**
Pause File Copture	**<Alt>-CP<Ctrl>-<Enter>**
Review received informatian (copture buffer)	**<Alt>-R**
Issue o commond to Crosstolk	**<Alt>-A**, type commond
Uplood on ASCII file	**<Alt>-U**, enter o file nome
Dawnlood on ASCII file	**<Alt>-CT<Enter>**, enter a file nome
Receive o binory file	**<Alt>-P**, select Receive, **<Enter>**, enter o file nome
Send o binary file	**<Alt>-P**, select Send, **<Enter>**, enter a file name
Abort file tronsfer	**<Ctrl>-<Break>**
Send o breok signol	**<Ctrl>-B**
Tronsfer o file in background	Initiate file tronsfer, press **<Alt>-<Esc>**, perform DOS functions or apen ond run another opplicotion; to return to sessian, press **<Alt>-<Esc>** agoin
Toggle between stotus ond terminol screens	**<Alt>-X**
Disconnect ond hong up	**<Alt>-O**

PC WORLD

Instant Reference Card #11

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ADVANCED: CROSSTALK MK.4

SCRIPT FILES

What to do: The Crosstalk Application Script Language (CASL) lets you create *script* files that can automate both routine and complex communications tasks, automating unattended communications sessions, creating custom front ends, and more.

Record actions in a script file	**<Alt>-M**, select *LEARN*, **<Enter>**
Edit a script file	**<Alt>-E**, enter a file name
Execute a script file	**<Alt>-M**, use cursor keys to select entry
Cancel a script	**<Ctrl>-<Break>**
Compile a script	**compile** *filename*

Tip: Use the DO LEARN command to create your first scripts. This script-making script automatically produces an editable XTS source code file containing the CASL commands *Crosstalk* uses to execute tasks.

Tip: Every time you modify a script, you need to compile it for top performance. If you don't, *Crosstalk* will automatically run the previously compiled version.

Fold Here

BUILT-IN SCRIPTS

What to do: Even if you never write a script, you can take advantage of CASL's power—there are numerous script files that ship with the program. To get to them, press **<Alt>-M**, highlight a file name, and press **<Enter>**, or type **DO** *filename* from the command line. Here are a few of the scripts.

Script name	Description
Answer	Changes the Answer setup entry
Browser	Browses (views) text files
Colors	Changes the screen colors
Config	Changes the system configuration
Convert	Converts *Crosstalk XVI* command and script files to *Mk.4* format
DOSMenu	Displays a menu of DOS functions
Easycall	Creates new directory entries
Fixbook	Makes global changes to all directory entries
Learn	Records keystroke actions in a script file
Menus	Turns off-line and on-line menus on/off
Newcall	Creates dialing directory entries
Whereis	Locates files on disk
Xdir	Sorts directory of files and displays estimated transfer times

Tip: You can add any script file you create to the script menu. Press **<Alt>-M** to activate the menu, press **<Insert>** to view scripts, cursor to the target script, and press **<Enter>**.

SCRIPT COMMANDS

What to do: These are some of the commands used frequently in CASL scripts. In many cases, you can issue them independently on the command line. To see a complete list, type **list commands**.

Command	Function	Example
ALARM	Plays a tune	ALARM 6
ANSWER	Puts the modem in auto-answer mode and waits a certain number of minutes for a call	ANSWER 15

SCRIPT COMMANDS (continued)

Command	Function	Example
BROWSE	Displays text files	BROWSE "C:\xtalk\sample.doc"
BYE	Disconnects current call	BYE
CALL	Calls a dialing directory entry and executes its script	CALL *entryname*
CAPTURE	Starts/stops capturing text to a file	CAPTURE TO *filename*
DIAL	Dials a telephone number	DIAL 9,1,213-555-1212
END	Marks end of a script	END
FKEY	Assigns text or commands to a function key	FKEY 5"@CAPTURE /"
INCLUDE	Includes the contents of an external script file in the current script file	INCLUDE *filename*
KCLEAR	Clears function-key definitions	KCLEAR
KLOAD	Loads a set of definitions for the function keys	KLOAD *filename*
KSAVE	Saves the current function-key definitions to a file	KSAVE *filename*
LOAD	Loads a directory entry	LOAD *entryname*
LPRINT	Sends text to the printer	LPRINT "This is a test"
OFF	Disconnects the current session	OFF
PRINTER	Turns printer on or off	PRINTER ON
QUIT	Stops current session (if it's the last active session, also exits *Mk.4*)	QUIT
RECEIVE	Receives a binary file	RECEIVE *filename*
REPLY	Sends a string of text to the other computer	REPLY "Hello"
REQUEST	Requests a file or group of files from another computer	REQUEST *filename*
SEND	Sends a file or group of files to another computer	SEND *filename*
STARTUP	Contains name of a script that runs automatically when *Crosstalk* is first loaded (or a new session is started)	STARTUP *filename*
UPLOAD	Uploads a text file	UPLOAD *filename*
WAIT	Waits for a string of text from the other computer	WAIT 10 SECONDS FOR "Hello"

Fold Here

TROUBLESHOOTING

What to do: Here are solutions for some common on-line problems.

Problem	Probable cause	Solution
Modem does not dial	Modem turned off or not connected	Turn modem on or connect modem
Modem hangs up before connection	"Wait for answer" period is not long enough	**<Alt>-S<Page Down>**, enter longer time on the Patience entry
Crosstalk disconnects after connection	Wrong setup parameters	**<Alt>-S**, adjust the Speed and/or WordFormat settings
Garbled transmission	Wrong setup parameters	**<Alt>-S**, adjust the Speed and/or WordFormat settings
Characters are doubled or don't appear	Wrong duplex setting	**<Alt>-S<Page Down>**, change Echo
Modem does not answer a call	Answer mode not turned on	**<Alt>-S<Page Down>**, change Mode to Answer

Tip: When troubleshooting problems, make only one change at a time. If it doesn't fix the problem, change it back. Record any changes you make.

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```
{Indent}{Indent}{Left Mar Rel}
{PAUSE}{Tab}{PAUSE}{Search Left}
{Indent}{Search}
{Home}{Home}{Home}
{Left}{DISPLAY OFF}{Graphics}
fctcsb.12{Enter}.12{Enter}{Exit}
{Home}{Home}{Down}{Enter}{QUIT}
```

FIGURE 1: This WordPerfect macro lets you easily insert check boxes into your documents.

Start the macro and enter a number, optionally followed by a period. Press <**Enter**>, and then type a paragraph. Press <**Enter**> again, and the macro will create a small graphics box to the left of the number. You can then restart the macro to create another checked item.

Michael P. Rose
Spring, Texas

Editor's note: I can think of dozens of great uses for this macro. You could use it to prepare multiple-choice tests, opinion polls, or even shopping lists.

FIGURE 1 *shows the macro commands as they appear in the macro editor. To enter the macro, start* WordPerfect, *then press* <**Home**><**Ctrl**>-<**F10**>. *Press* <**Alt**>-**C** *to assign a hot key—or type a file name if you prefer to name your macros—and type a description such as* **Check Boxes** *followed by* <**Enter**>. *This will take you to the macro editing screen. Once you're there, press* <**Delete**> *to delete the '{DISPLAY OFF}' command.*

Next, type the macro commands. The commands displayed in uppercase must be selected from the macro-command menu, which you bring up by pressing <**Ctrl**>-<**Page Up**>. *For others, press the associated key. For example, to enter '{Indent}', press* <**F4**>. *To enter '{Left Mar Rel}', press* <**Shift**>-<**Tab**>. *Press* <**Ctrl**>-**V** *before macro-editing keys such as '{Tab}', '{Home}', '{Left}', '{Enter}', '{Down}', and '{Exit}'. Press* <**F7**> *to exit the macro editor.*

In your document, press <**Alt**>-**C** *(if that was your choice for a hot key combination) to begin a new check-mark paragraph. If you wish to number your paragraphs, type in a number and press* <**Enter**>. *Otherwise, just press* <**Enter**>. *Be sure to press* <**Enter**> *after the optional number and at the end of each paragraph.*

Tom Swan is the author of Learning C++ *and* Mastering Turbo Debugger *(Howard W. Sams, Carmel, Indiana, 1991, 1990).*

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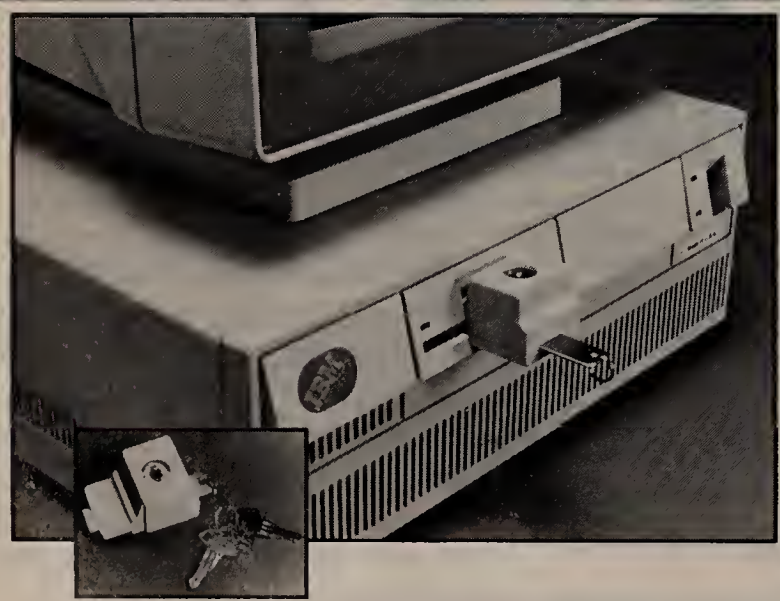

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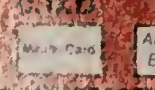

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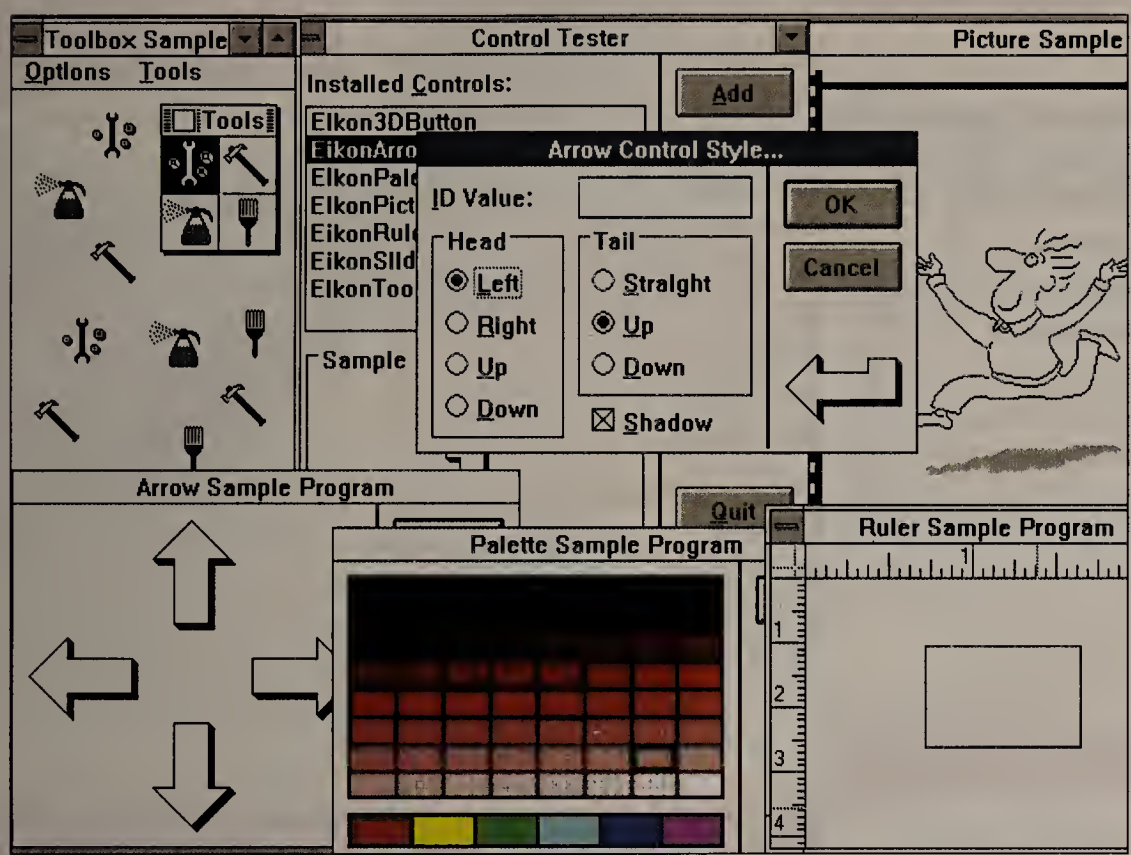
DEVELOPER'S TOOLBOX

Windows Tools Show Faint Promise



Control Pak/W provides a tester and custom controls for Windows developers.

Tom Swan

At Fall COMDEX, I expected to find a flood of *Windows* development tools. But what I saw at the show and what has trickled in since haven't exactly drowned me in goodies. Maybe when Borland releases *Turbo Pascal for Windows,* my spirits will lift. Until then, current *Windows* tools show promise, but many also exhibit glaring flaws.

Consider *Dialog Coder* from The Software Organization. After designing a dialog with an editor or a similar product, you use *Dialog Coder* to create triggers and links between fields. For example, you can set up a Description button that enables additional controls.

This is exactly the kind of tool I need to reduce the amount of hand work in C. But I also need a clearly written manual. *Dialog Coder*'s manual is poorly organized, and the step-by-step tutorial is incomplete. The product's interface also needs improvement: After setting up a link between a button and a field, there's nothing on screen to indicate that a link exists. I should be able to *see* triggers and links as I create them.

Another product I'm trying to like (with better success) is *Control Pak/W,* written by Eikon Systems and sold by Sage Software. The product's manual is superb. In fact, I learned more about custom controls by reading the first few chapters than from any other source.

Control Pak/W includes a control tester and several custom controls—buttons, arrows, picture frames, rulers, a color-palette selector, sliders, and a toolbox. The toolbox is nifty; you set up tools in a small window, like a paint program's brush palette.

This product would be great if it had more control styles and an editor for designing new controls. Currently, if the toolbox doesn't have the control you need, you're out of luck. *Control Pak/W* is good, but at $595, it's overpriced.

On the convention floor, *Object Script* from Matesys caught my eye. Billed as an alternative to Asymetrix's *ToolBook, Object Script* lets you design applications by cutting, pasting, and linking graphical elements. Despite its name, however, *Object Script* lacks *ToolBook's* sophisticated, object-oriented script language, so you can't, for instance, use common OOP techniques like inheritance and encapsulation to build reusable objects. Too bad, because unlike *ToolBook, Object Script* is fast.

Some encouraging words came in the mail: Peter Norton and Paul Yao's *Windows 3.0 Power Programming Techniques,* published by Bantam. Yao knows *Windows* inside and out, and his extensive knowledge shows on every page. Good book.

I wish I could say the same about the current wave of *Windows* development tools. But so far, the surge is barely making a ripple.

Let's talk it over. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241.

WHERE TO BUY

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The Software Organization
56 Kirkland St. #3
Cambridge, MA 02138
617/354-2012, 617/354-0667 (fax)
LIST PRICE: $499
Reader service no. 626

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Sage Software, Inc.
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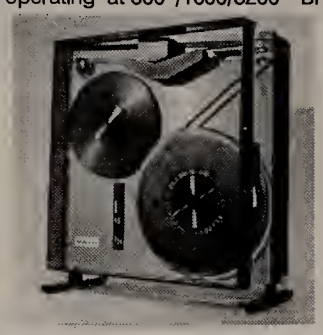

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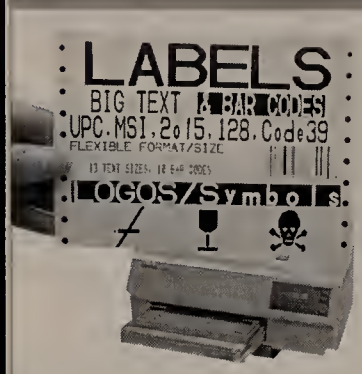

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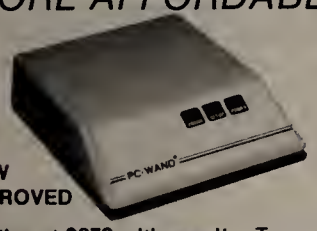

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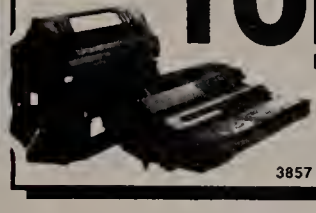

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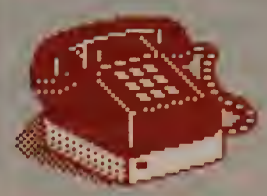

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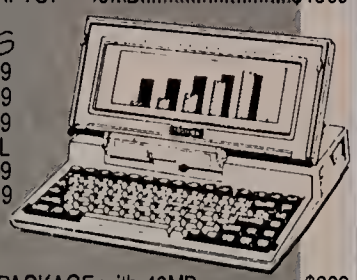

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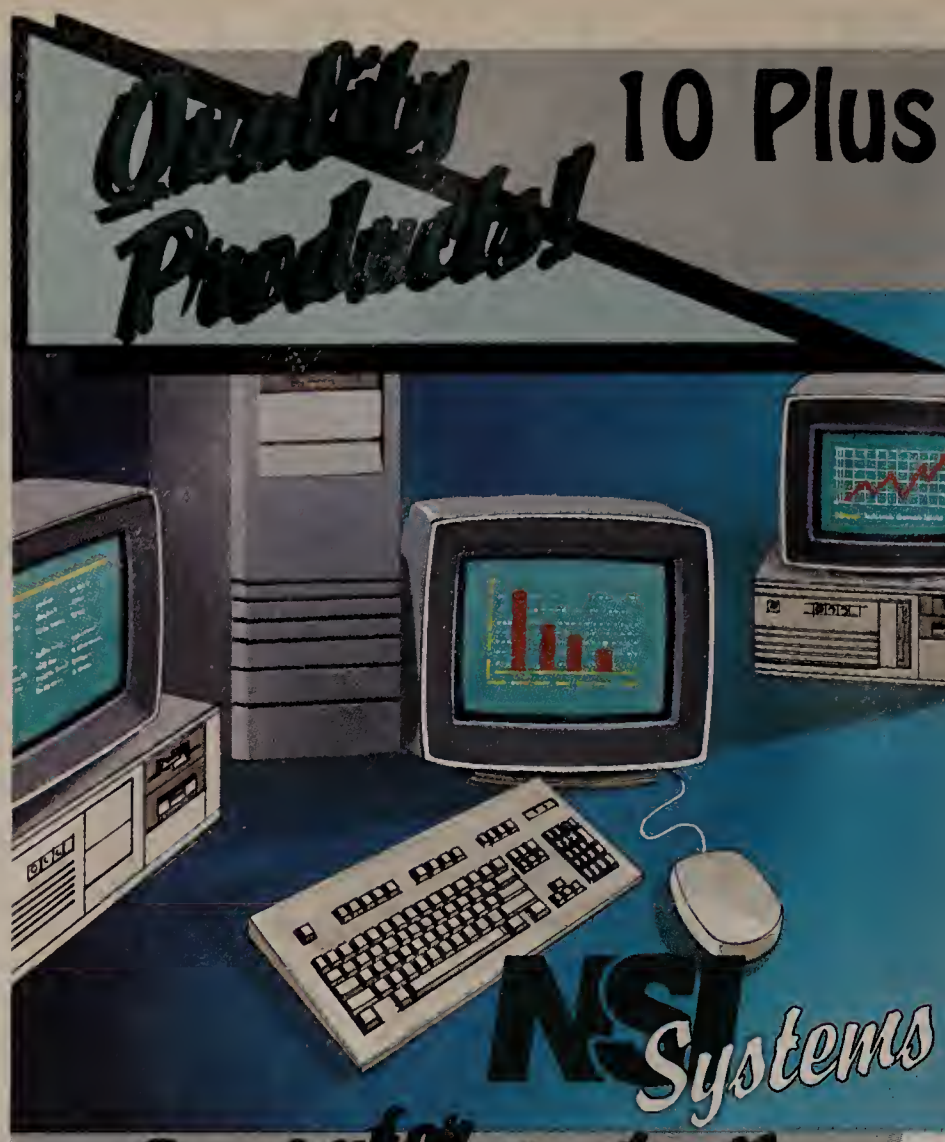

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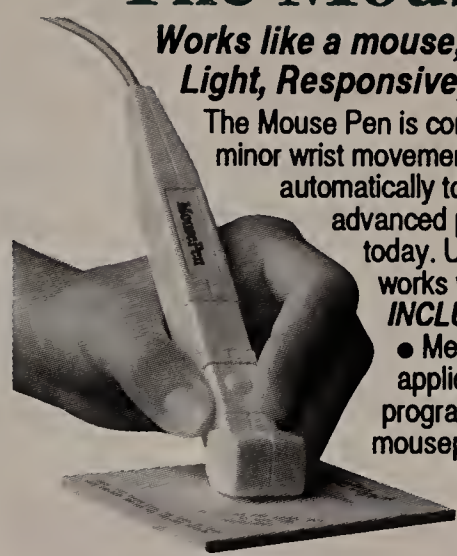

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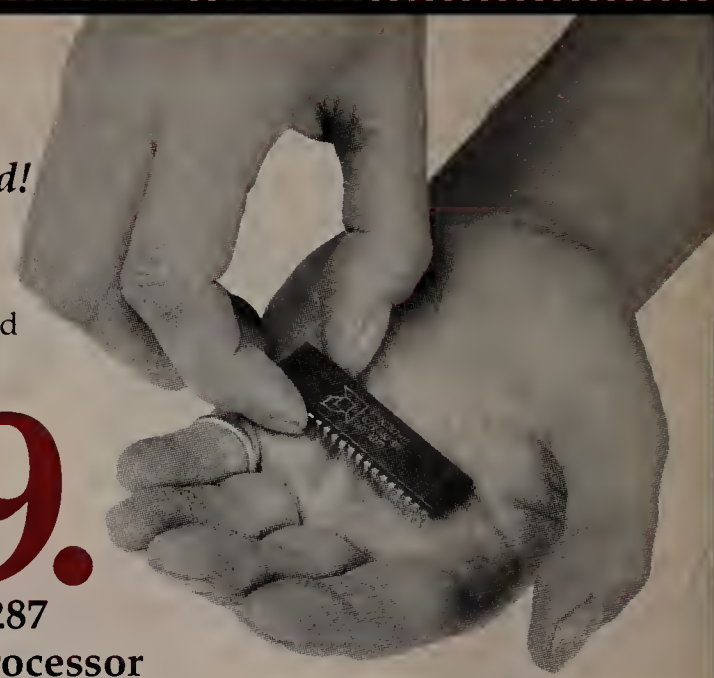

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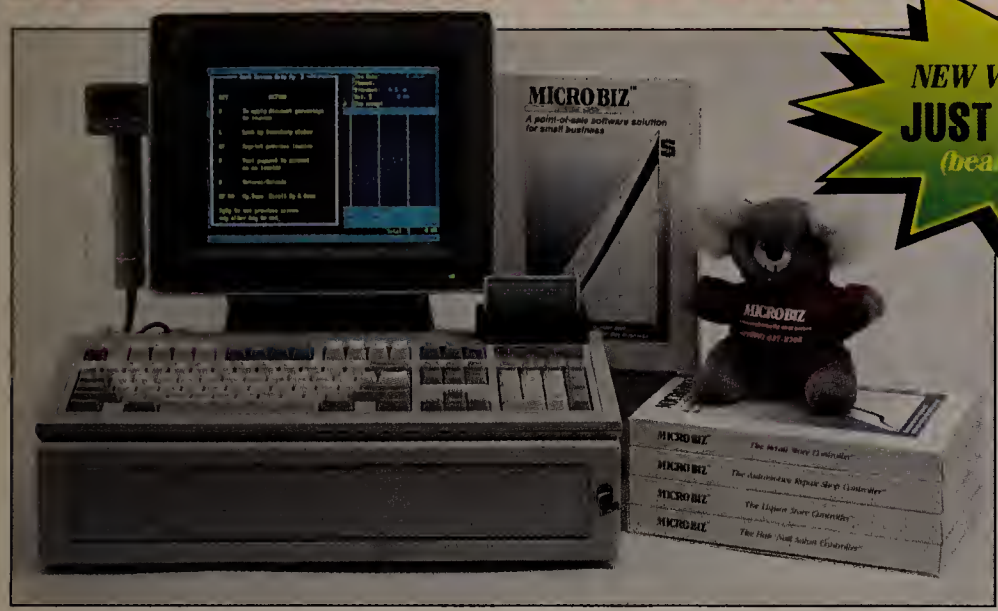

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Record Control in Record Time

With **The Retail Controller Jr.**, you'll make smarter management decisions because you'll have pushbutton-quick, down-to-the-penny information. Operating at your sales counter, the program captures vital customer and sales data, organizes it, and presents it in neat, accurate reports that eliminate guesswork and improve control.

Bar Code Easy, Feature Packed

The Retail Controller Jr. is designed for first-time computer users. Even a brand new clerk can learn how to process transactions in minutes. The speed and efficiency of barcoding (optional) can keep keystrokes to a minimum. Pull- down menus, on-screen help windows, and "point and select" customer and product lookup all help to make the program almost intuitively easy to use. All transactions are performed from just one Work Screen. Yet it incorporates many of the features you'd expect to find only in systems costing hundreds of dollars more, features like:

- ✔ automatic credit card verification
- ✔ bar code compatibility
- ✔ color/size matrix
- ✔ multiple pricing levels
- ✔ tracks inventory by size/color/style
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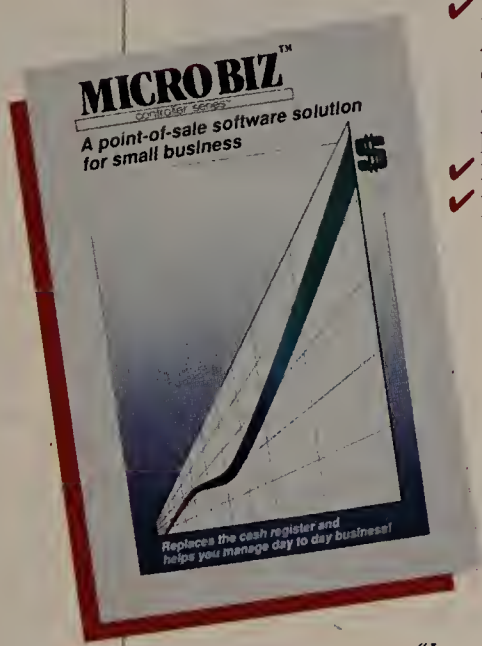

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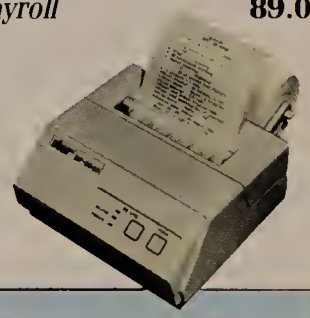

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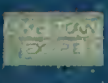

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TAKING IT HOME

The practical guide to home/office computing

Saving your bacon and CMOS

Steve Bass

"Gusty winds below the foothills" is the weather report I used to dread most. It means that Santa Ana winds are kicking in and a downed power line can knock out the electricity at any time.

Losing data is bad enough. But what really hurts is if you don't turn your system off before the power company's auxiliary generator kicks in. It's a sickening feeling watching your screen pop off and hearing your hard disk power down, only to see everything jolt back to life again. That'll fry your CMOS memory quicker than anything Kentucky Colonel can whip up—and not even a surge suppressor can save you.

The CMOS chip holds vital configuration specs for all your hardware—information about memory, time, and date, plus the display and disk types entered when you first got your PC. Without that data, the computer is inoperable, and unless you've made provisions, getting it back can take days.

On the other hand, you can restore your CMOS table in about half an hour if you've created a *rescue disk* containing all your essential setup programs and CMOS data. Start by making the disk bootable, using the DOS **format /s** command. Next, copy the values of the CMOS table to a file on the rescue floppy using *The Norton Utilities'* Disk Tools. If you have a power failure, you can boot off this disk and run Disk Tools to restore these values to your CMOS chip.

In addition to that file, you'll want to put every conceivable tool and device driver you can on your rescue disk. I start with *QEdit Advanced*, a lean shareware text editor with which I can rebuild my CONFIG.SYS and AUTOEXEC.BAT files as I check the integrity of my devices. Then there are all the drivers I might need for my peripherals, including my Plus Hardcard driver, which lets me access that hard disk even if my C: drive won't boot. I also have *The Norton Utilities'* Disk Tools and Disk Doctor II to fix any damage to my hard disk. Finally, I keep the SETUP program for my computer in case I need to reconfigure the CMOS data.

PETER SPACEK

Even if disaster doesn't strike, the CMOS may go kaflooey (a DOS technical term) if the batteries powering its volatile memory run down. Symptoms could include the time and date falling behind or inexplicable read/write errors. I substituted the old batteries with new Rayovac four-year alkalines. Replacement is an easy and satisfying chore.

Finally, since I don't mind putting my money where my data is, I went one better and outfitted my home and office computers with uninterruptible power supplies instead of surge suppressors. UPS's have fallen in price, and they give you surge protection as well as enough battery power to save files and shut down your system safely.

I chose an inexpensive UPS for home—the Smart UPS-400. It comes with *Power-Doctor*, software that measures the quality of the electric company's power. For the office file server, I selected a more powerful and feature-laden UPS, the Professional Series UPS 7200. Besides providing a network interface and RJ-11 jacks for my modem lines, the 7200 lets me power up my computer for remote access.

That should protect me against most power mishaps. Even in the worst case, though, I can take out my emergency rescue disk and get my equipment back in working order in the time it takes to jog down to the Colonel for a bucket of extra crispy. So can you.

Contributing Editor Steve Bass is a family therapist and president of the Pasadena IBM Users Group.

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Quantity	Timeframe	Quantity	Timeframe
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5. What do you plan to use computer products for?
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If we've said it once, we've said it ten times. You can get a custom-built Dell® computer with better service for $1,700 to $16,000 less than a similarly configured Compaq.†

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12-1-89

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Either way, the first year of on-site service is included in the system price.

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So if you were planning to buy a Compaq, take a deep breath, count to ten and call Dell.

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devices sold for use in commercial environments only. *Performance Enhancements: Within the first megabyte of memory, 128 KB (316SX, 320LT, 316LT and 210) 96 KB (333D, 325D, 333P, 325P, 320N and 212N) and 384 KB (320LX, and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. †Source: Compaq Computer Corporation price list effective 10/15/90. **Payment based on 36-month, open-end and i486 are trademarks of Intel Corporation. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks tion Guarantee, limited warranty, and Xerox's Service Contract, please write to Dell USA Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty. ©1991 Dell Computer Corporation. All rights reserved.

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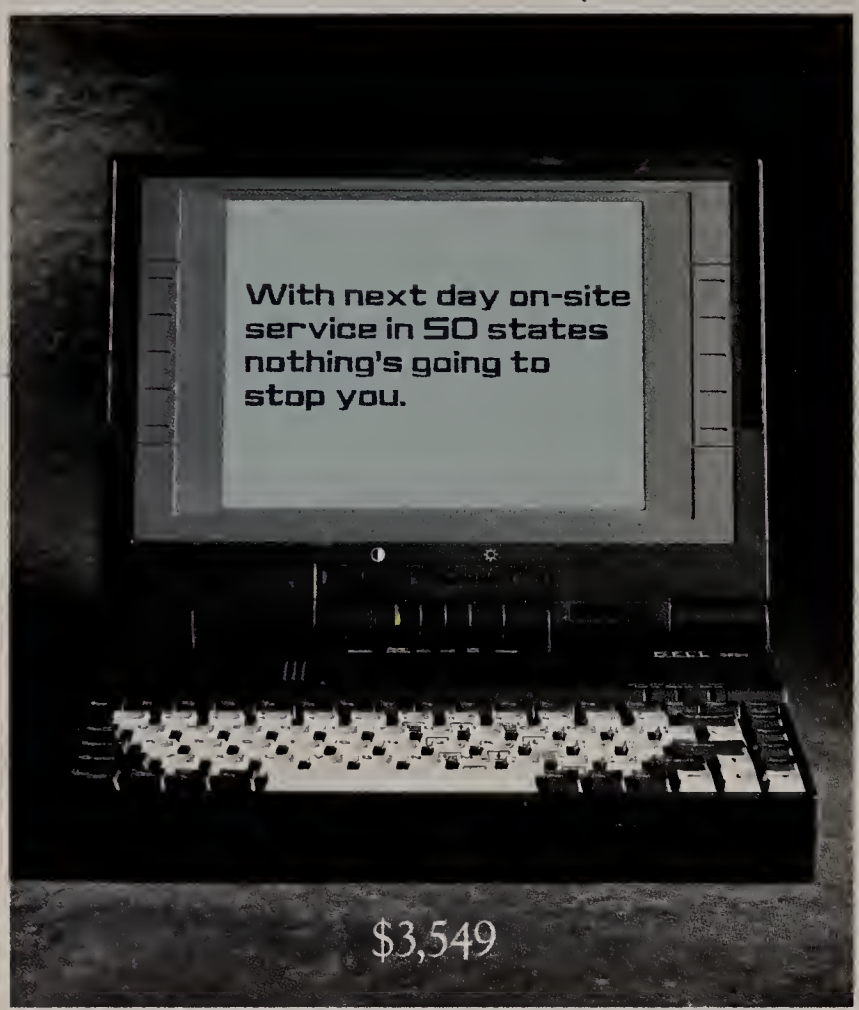

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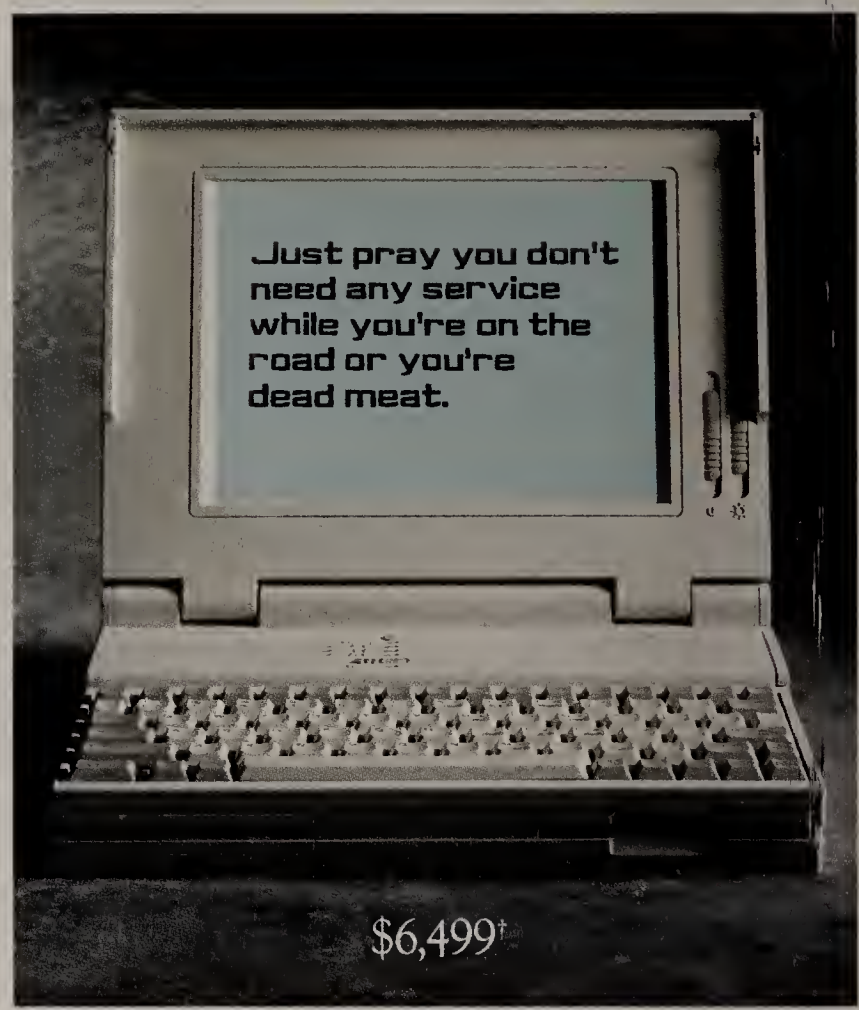

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